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THE BOTANY

OF

THE ANTARCTIC VOYAGE

OF

H.M. DISCOVERY SHIPS *EREBUS* AND *TERROR*,

IN THE YEARS 1839–1843,

UNDER THE COMMAND OF

CAPTAIN SIR JAMES CLARK ROSS, Kt., R.N., F.R.S. & L.S., ETC.

BY

JOSEPH DALTON HOOKER, M.D., R.N., F.R.S. & L.S., ETC.

ASSISTANT SURGEON OF THE "EREBUS," AND BOTANIST TO THE EXPEDITION.

PART III.

FLORA TASMANIÆ.

VOL. II.

MONOCOTYLEDONES AND ACOTYLEDONES.

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French.—D'Entrecasteaux (Labillardière), Baudin (Leschenault), Freycinet (Gaudichaud), Duperrey (D'Urville and Lesson), D'Urville (Lesson), D'Urville (Hombron and Jacquinot).

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ERRATA.

Page xxxix, line 6, *for* tropical *read* tropic of.

Page cxxviii, in P.S., line 5, *for* New Guinea *read* Celebes.

KEY* TO THE NATURAL ORDERS OF TASMANIAN FLOWERING PLANTS.

(*Chiefly adapted from Lindley's 'Vegetable Kingdom.'*)

DICOTYLEDONS.

I. Polypetalous.

A. Polyandrous. Stamens more than 20.

§ Ovaries inferior.

Leaves simple, usually dotted with aromatic oil-glands . . . . . . XXXI. *Myrtaceæ.*

Leaves simple, fleshy, inodorous . . . . XXXV. *Ficoideæ.*

§§ Ovaries superior.

1. Leaves stipulate.

a. Carpel, 1 or more, free.

Stamens perigynous, free. Carpels many, 1-seeded . . . XXVII. *Rosaceæ.*

Stamens hypogynous, free. Carpels several, 1- or several-seeded I. *Ranunculaceæ.*

Stamens hypogynous. Carpel 1. Flower papilionaceous . . XXVI. *Leguminosæ.*

Stamens hypogynous, combined. Flower regular . . . . . XV. *Malvaceæ.*

β. Carpels more or less combined into a $3-\infty$-celled ovary.

Stigmas distinct, simple, filiform. Anthers opening by 1–2 slits XV. *Malvaceæ.*

2. Leaves exstipulate.

Carpel 1, many-ovuled. Fruit succulent . . . . II. *Magnoliaceæ.*

Carpel 1, many-ovuled. Fruit a legume . . . . XXVI. *Leguminosæ (Acacia).*

Carpels many, free, 1-ovuled . . . . I. *Ranunculaceæ (Clematis).*

Carpels many, free, 2- or more-ovuled . . . . IV. *Dilleniaceæ.*

Carpels 2, combined. Ovary 2-celled, ∞-ovuled. Styles 2, free XXXVI. *Cunoniaceæ (Bauera).*

Carpels 3, combined. Ovary 3-celled, 3-ovuled. Styles 3, 2-partite LXXII. *Euphorbiaceæ (Ricinocarpus).*

Carpels 3–12, combined. Ovary 2-celled, ∞-ovuled. Styles 3–12, free XVIII. *Hypericineæ.*

Carpels 2–4, combined. Ovary 2–4-celled, 2-ovuled. Style 1 . . XVII. *Elæocarpeæ.*

B. Oligandrous. Stamens fewer than 20.

§ Ovary inferior.

Flowers umbellate.

Herbs . . . . XXXVIII. *Umbelliferæ.*

Shrubs . . . . XXXIX. *Araliaceæ.*

Flowers not umbellate.

Leaves exstipulate. Herbs. Petals 4. Cells of ovary many-ovuled XXVIII. *Onagrariæ.*

Leaves exstipulate. Shrubs. Petals 5 . . . . XXXI. *Myrtaceæ.*

Leaves exstipulate. Herbs. Petals 2–4. Cells of ovary 1-ovuled XXX. *Halorageæ.*

Leaves stipulate. Shrubs or trees. Stamens 4–5 . . . . . XXIV. *Rhamneæ.*

Leaves stipulate. Shrubs. Stamens 10 or more . . . . . . XXXI. *Myrtaceæ (Calycothrix).*

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* This Clavis is not intended to supersede the study of a proper Work on the Natural Orders, such as Lindley's 'Vegetable Kingdom,' but only as an aid to the Tasmanian botanist. A full and sufficient account of the Tasmanian Orders would be far too extensive for the limits of this volume, and properly belongs to introductory works on Botany.

§§ Ovary superior.

† Leaves stipulate.

a. Carpels solitary, or several, and then free.

Flowers papilionaceous . . . . XVI. *Leguminosæ*.
Flowers regular. Styles 1 to each carpel . . . . XVII. *Rosaceæ*.
Flowers regular. Stigmas 3–5. Ovary 1-celled . . . . . LXII. *Plumbagineæ*.
Flowers regular. Styles 2. Ovary 2-celled . . . . XXXVI. *Cunoniaceæ (Anodopetalum)*.

β. Carpels several, more or less combined.

* Ovules parietal.

Flowers regular. Leaves with glandular hairs . . . . . VII. *Droseraceæ*.
Flowers irregular. No glandular hairs . . . . VI. *Violarieæ*.

** Ovules axile or basal.

Leaves opposite, 2-foliolate . . . . XXII. *Zygophylleæ*.
Leaves opposite, simple . . . . XIV. *Elatineæ*.
Leaves alternate, 3-foliolate . . . . XXI. *Oxalideæ*.
Leaves alternate, simple or pinnate.
Fruit with a long beak . . . . XX. *Geraniaceæ*.
Ovary 1-celled, with basal ovules . . . . XXXIII. *Portulaceæ*.
Ovary 3–5-lobed and -celled, with solitary ovules in each . XXV. *Stackhousieæ*.
Ovary 3-celled, with 2 ovules in each cell . . . . LXII. *Euphorbiaceæ*.

†† Leaves exstipulate.

a. Carpels several, free.

Stamens hypogynous. Carpels 1-seeded . . . . I. *Ranunculaceæ*.
Stamens hypogynous. Carpels 2- or few-seeded . . . . . IV. *Dilleniaceæ*.
Stamens hypogynous. Carpels many-seeded . . . . . . XXXVI. *Cunoniaceæ (Tetracarpæa)*.
Stamens perigynous. Carpels many-seeded . . . . XXXIV. *Crassulaceæ*.

β. Carpel solitary.

Flower papilionaceous . . . . XVI. *Leguminosæ*.
Flower regular. Shrubs . . . . XVI. *Buettneriaceæ*.
Flower regular. Herbs . . . . XXXIII. *Portulaceæ (Calandrinia)*.

γ. Carpels 2 or more, combined into a 1–∞ -celled ovary.

* Styles free, several.

Ovary 1-locular. Ovules parietal . . . . XI. *Frankeniaceæ*.
Ovary 1-locular. Ovules basal . . . . XII. *Caryophylleæ*.
Ovary 2-locular. Shrubs . . . . XXXVI. *Cunoniaceæ*.
Ovary 3-locular. Shrubs . . . . LXII. *Euphorbiaceæ*.
Ovary 5-locular. Herbs . . . . XIII. *Lineæ*.

** Styles combined into a solitary simple one.

Leaves opposite. Stamens hypogynous. Ovary 4–8-lobed or -celled . . . . XXIII. *Rutaceæ*.
Leaves opposite. Stamens hypogynous. Ovary 2-celled . . L. *Oleaceæ*.
Leaves alternate or whorled.
Anthers 6 (rarely 1–4), 4 longer, opening by slits . . . . V. *Cruciferæ*.
Anthers 5, opening by slits. Ovary 1-celled . . . . XXXIII. *Portulaceæ*.
Anthers 8–10, opening by pores. Ovary 2-celled . . . . . IX. *Tremandreæ*.
Anthers 5, opening by pores or slits. Ovary 3–5-celled . . XVI. *Buettneriaceæ*.
Anthers 5, opening by slits. Ovary 3–5-celled . . . . X. *Pittosporeæ*.

Stamens 4–6, perigynous. Ovary 2-celled, ∞-seeded. Calyx cylindric. Herbs . . . . XXX. *Lythrarieæ.*
Stamens 6, perigynous. Ovary 1-celled, ∞-seeded. Calyx turbinate. Shrubs . . . . XXXVII. *Escallonieæ.*
Stamens 4–5, perigynous, opposite petals. Ovary 3-celled, 3-seeded. Calyx flat. Shrubs . . . . XXIV. *Rhamneæ (Discaria).*

II. Monopetalous.

A. Ovary inferior.
† Flowers (minute) in an involucrate head.
Stigmas 2, naked . . . . XLII. *Compositæ.*
Stigma 1, in a 2-lipped cup . . . . XLIII. *Brunoniaceæ.*
†† Flowers not in an involucrate head.
* Leaves alternate.
Anthers 5, 2-celled, combined. Stigma not in a cup . . . . XLVI. *Lobeliaceæ.*
Anthers 2, 2-celled, combined. Stigma not in a cup . . . . . XLV. *Stylideæ.*
Anthers 5, 2-celled, free, alternate with corolla-lobes. Stigma not in a cup . . . . XLVII. *Campanulaceæ.*
Anthers 5, 2-celled, free, opposite corolla-lobes . . . . . . LXI. *Primulaceæ.*
Anthers 5, 2-celled, free or combined. Stigma in cup . . . . XLIV. *Goodeniaceæ.*
Anthers 3–5, free, 1-celled. Filaments combined . . . . XXXII. *Cucurbitaceæ.*
** Leaves opposite or whorled.
Simple, stipulate . . . . XLI. *Rubiaceæ.*
Pinnate . . . . XL. *Caprifoliaceæ.*
B. Ovary superior. Flowers regular.
† Carpels free, or combined into a deeply lobed ovary.
* Stamens free from corolla.
Hypogynous. Leaves opposite . . . . XXIII. *Rutaceæ.*
Perigynous. Leaves alternate . . . . XXV. *Stackhousieæ.*
** Stamens attached to corolla.
Unequal . . . . LVI. *Labiatæ (Lycopus).*
Equal. Anthers 2-celled, opening by slits . . . . LV. *Boragineæ.*
Equal. Anthers 2-celled, opening by pores . . . . XLVIII. *Ericeæ.*
Equal. Anthers 1-celled . . . . XLIX. *Epacrideæ.*
†† Carpels combined. Ovary not deeply lobed.
* Stamens hypogynous.
Anthers 1-celled . . . . XLIX. *Epacrideæ.*
Anthers 2-celled . . . . XLVIII. *Ericeæ (Prionotes).*
** Stamens inserted on corolla.
α. Corolla-lobes plaited in buds. Leaves alternate.
Capsule few-seeded . . . . LIV. *Convolvulaceæ.*
Berry many-seeded. Anthers with pores . . . . LVIII. *Solaneæ.*
Capsule many-seeded. Anthers with slits . . . . LII. *Gentianeæ.*
β. Corolla-lobes twisted or crumpled in bud. Leaves opposite.
Small trees or climbing shrubs . . . . LI. *Apocyneæ.*
Erect or decumbent herbs . . . . LII. *Gentianeæ.*

γ. Corolla-lobes imbricate or valvate.

1. Leaves opposite.

Stamens 2. Ovules numerous . . . . LIX. *Scrophularineæ.*

Stamens 2. Ovules few . . . . L. *Oleaceæ.*

Stamens 4. Ovules numerous . . . . LIII. *Loganiaceæ.*

2. Leaves alternate.

Anthers 1-celled . . . . XLIX. *Epacrideæ.*

Anthers 2-celled, opening by pores . . . . XLVIII. *Ericeæ.*

Anthers 2-celled, opening by slits.

Herbs. Capsule bursting horizontally . . . . . . LXIII. *Plantagineæ.*

Shrubs. Leaves with translucent dots . . . . LVII. *Myoporineæ.*

Stamens opposite corolla-lobes . . . . LXI. *Primulaceæ.*

Ovary 1-celled, 1-ovuled . . . . LXII. *Plumbagineæ.*

C. Ovary superior. Flowers irregular.

Anthers opening by pores . . . . VIII. *Polygaleæ.*

Ovary deeply 4-lobed. Stamens 4 . . . . LVI. *Labiatæ.*

Ovary simple or 2-lobed, 2-celled. Stigma not in a cup . . . . . LIX. *Scrophularineæ.*

Ovary 1-celled, with central placenta . . . . LX. *Lentibularieæ.*

Stigma in a cup . . . . XLIV. *Goodeniaceæ (Velleia).*

III. Achlamydeous (no apparent perianth).

§ Trees or shrubs. Male flowers in catkins.

Branches jointed, leafless, with toothed sheaths . . . . . . LXXV. *Casuarineæ.*

Branches with leaves . . . . LXXVI. *Coniferæ.*

§§ Herbs. Male flowers solitary or panicled . . . . XXIX. *Halorageæ.*

IV. Monochlamydeous.

§ Ovary inferior (flowers usually unisexual).

Twining, parasitic, leafless herbs . . . . LXVIII. *Laurineæ.*

Climbing or prostrate leafy herbs, without tendrils . . . . XXXV. *Ficoideæ.*

Climbing or prostrate leafy herbs, with tendrils. Ovary hispid . . XXXII. *Cucurbitaceæ.*

Trees, with hermaphrodite flowers . . . . XXXI. *Myrtaceæ (Eucalyptus).*

Trees or shrubs, with unisexual flowers. Stamens 8–12 . . . . LXXIV. *Cupuliferæ.*

Herbs, trees, or shrubs, with stamens 4–5, opposite the perianth-lobes . LXXI. *Santalaceæ.*

Herbs, with 2–4 stamens, alternate with perianth-lobes . . . . . XXIX. *Halorageæ.*

§§ Ovary superior.

α. Leaves stipulate.

Stipules ochreate. Flowers usually hermaphrodite . . . . . . LXIV. *Polygoneæ.*

Stipules free. Stamens 1-5, opposite lobes of perianth. Flowers unisexual LXXIII. *Urticeæ.*

Stipules free. Stamens 4–5. Flowers hermaphrodite . . . . . XXIV. *Rhamneæ (Cryptandra).*

Stipules free. Stamens numerous . . . . XXVI. *Leguminosæ (Acacia).*

Stipules free. Stamens 8. Styles 3 . . . . LXXII. *Euphorbiaceæ.*

β. Leaves reduced to sheaths of the jointed branches . . . . LXXV. *Casuarineæ.*

γ. Leaves exstipulate.

† Flowers hermaphrodite. Carpels many, free . . . . I. *Ranunculaceæ.*

§ Carpels solitary, 1-celled, with a simple style.

Anthers 12 (3 sterile), opening by valves. Twining parasite. LXVIII. *Laurineæ.*

Anthers 4, 2-celled, opposite lobes of perianth. Shrubs and trees.
Seeds exalbuminous . . . . LXIX. *Proteaceæ.*
Anthers 1–4, 2-celled. Seeds albuminous . . . . LXX. *Thymeleæ.*
Anthers 3, united (and 1 sterile filament) . . . . LXIX. *Proteaceæ (Conospermum).*
Anthers 2–5, free, 1-celled . . . . LXVI. *Amarantaceæ.*
Stamens very numerous. Anthers free . . . . XXVI. *Leguminosæ.*

§§ Carpels combined, 1-celled, with 2 or more styles.
Ovule 1 or several, basal. Leaves opposite, connate . . . . XII. *Caryophylleæ.*
Ovule 1, basal. Seed 1. Leaves usually alternate . . . LXVII. *Chenopodiaceæ.*
Ovules several. Seeds several . . . . V. *Cruciferæ (Lepidium).*

†† Flowers unisexual.
Tree. Leaves opposite. Ovaries ∞. Anthers opening by valves III. *Monimiaceæ.*
Trees or shrubs. Leaves alternate. Fruit winged . . . . . . XIX. *Sapindaceæ.*
Herbs, with 1–5 stamens opposite lobes of perianth . . . . LXXIII. *Urticeæ.*
Shrubs or trees. Leaves opposite. Stamens 2. Fruit drupaceous L. *Oleaceæ.*
Herbs, with alternate leaves, 2-celled anthers, 1-celled ovary, and 2 styles LXVII. *Chenopodiaceæ.*
Herbs, with 1-celled anthers, 1-celled ovary, and 1 style . . . . LXVI. *Amarantaceæ (Alternanthera).*
Herbs, with 2-celled anthers, 2-celled ovary, and 2 styles . . . LXV. *Phytolacceæ.*
Shrubs, with 2-celled anthers, 3-celled ovary, and discoid stigma LXXII. *Euphorbiaceæ (Beyeria).*

MONOCOTYLEDONS.

I. Petaloid. *Perianth distinct, generally membranous.*

A. Perianth superior.

a. Terrestrial plants. Flowers hermaphrodite.
Perianth irregular, of 6 unequal pieces . . . . I. *Orchideæ.*
Perianth regular. Anthers 1–4, extrorse, opposite the sepals . . . II. *Irideæ.*
Perianth regular. Anthers 3, introrse, opposite the petals . . . . III. *Hæmodoraceæ.*
Perianth regular. Anthers 6, extrorse . . . . IX. *Melanthaceæ (Campynema).*
Perianth regular. Anthers 6, introrse . . . . IV. *Hypoxideæ.*

β. Aquatic plants. Flowers unisexual . . . . V. *Hydrocharideæ.*

B. Perianth inferior.

a. Perianth of large pieces.
Stamens 6. Anthers extrorse . . . . IX. *Melanthaceæ.*
Anthers introrse. Seed rounded, with a thin testa . . . . . . X. *Smilaceæ.*
Anthers introrse. Seed often flattened, with a coriaceous, brittle, dark testa . . . . XI. *Liliaceæ.*
Stamens 3 . . . . XIII. *Xyrideæ.*

β. Perianth of 6 small, green, or dry chaff-like pieces.
Anthers extrorse. Ovules solitary . . . . VIII. *Alismaceæ.*
Anthers introrse. Ovules several . . . . XII. *Junceæ.*

II. Apetaloid. *Perianth very obscure or 0.*

Small floating green scales . . . . VI. *Pistiaceæ.*
Erect marsh plant, with long, soft, thick catkin . . . . VII. *Typhaceæ.*
Caulescent water-plants . . . . VIII. *Alismaceæ.*

III. Glumaceous. *Perianth of dry scales.*

Anthers 2-celled. Perianth of 6 nearly equal pieces . . . . XII. *Junceæ.*
Anthers 1-celled. Culms generally solid and terete . . . . XIV. *Restiaceæ.*
Anthers 2-celled. Perianth of alternate scales. Culms generally solid, 3-angled or flattened. Leaf-sheath not split to base . . . . XV. *Cyperaceæ.*
Anthers 2-celled. Perianth of alternate scales. Culms generally hollow, terete. Leaf-sheaths split to base . . . . XVI. *Gramineæ.*

KEY TO THE GENERA OF TASMANIAN FLOWERING PLANTS.

DICOTYLEDONS.

I. Ranunculaceæ.

Perianth single, valvate. Shrubs. Leaves opposite . . . . *Clematis*, p. 2.
Perianth single, imbricate. Herbs. Leaves radical. Ovule 1 . . . . *Anemone*, p. 4.
Perianth single, imbricate. Herbs. Leaves radical. Ovules ∞ . . . . *Caltha*, II. p. 355.
Perianth double, imbricate. Herbs. Ovule 1 . . . . *Ranunculus*, p. 5.

II. Magnoliaceæ.

Tasmannia, p. 10.

III. Monimiaceæ.

Atherosperma, p. 11.

IV. Dilleniaceæ.

Stamens in several bundles . . . . *Hibbertia*, p. 13.
Stamens in one unilateral bundle . . . . *Pleurandra*, p. 15.

V. Cruciferæ.

Pod long, compressed. Septum linear. Flowers white or lilac . . . . *Cardamine*, p. 19.
Pod long, sub-4-gonous. Flowers yellow . . . . *Barbarea*, p. 20.
Pod short, subterete. Flowers yellow . . . . *Nasturtium*, p. 21.
Pod short, compressed, narrow-linear ($\frac{1}{3}$ inch) . . . . *Stenopetalum*, p. 21.
Pod short, oblong, laterally compressed. Septum narrow . . . . *Hutchinsia*, p. 22.
Pod short, obcordate, laterally compressed. Septum narrow . . . . *Thlaspi*, p. 23.
Pod short, elliptic, flat. Leaves entire . . . . *Draba*, p. 24.
Pod short, oval, laterally compressed. Seed 1. Septum narrow . . . . *Lepidium*, p. 25.

VI. Violarieæ.

Herbs. Fruit capsular . . . . *Viola*, p. 26.
Shrub. Fruit baccate . . . . *Hymenanthera*, p. 27.

VII. Droseraceæ.

Drosera, p. 28.

VIII. Polygaleæ.

Comesperma, p. 31.

IX. Tremandreæ.

Tetratheca, p. 33.

X. Pittosporeæ.

Climbers. Flowers tubular. Fruit baccate . . . . *Billardiera*, p. 36.
Erect shrub, or tree. Flowers tubular. Capsule 2-valved. Seeds viscous . . . . . *Pittosporum*, p. 38.
Erect or prostrate shrubs. Flowers spreading. Capsule 2-valved. Seeds dry . . . . *Bursaria*, p. 38.

XI. Frankeniaceæ.

Frankenia, p. 40.

XII. Caryophylleæ.

Leaves stipulate . . . . *Spergularia*, p. 41.
Exstipulate. Perianth single, tubular, coriaceous . . . . *Scleranthus*, p. 42.
Exstipulate. Perianth double . . . . *Stellaria*, p. 43.
Exstipulate. Perianth single, of 4–5 sepals . . . . *Colobanthus*, p. 45.

XIII. Lineæ.

Linum, p. 46.

XIV. Elatineæ.

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XV. Malvaceæ.

Calyx with an involucellum . . . . *Lavatera*, p. 47.
Involucellum 0. Stamens 8–12. Flowers densely spicate . . . . *Lawrencia*, p. 48.
Involucellum 0. Stamens very numerous. Flowers corymbose . . . . *Plagianthus*, p. 49.

XVI. Buettneriaceæ.

Lasiopetalum, p. 50.

XVII. Elæocarpeæ.

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XIX. Sapindaceæ.

Dodonæa, p. 54.

XX. Geraniaceæ.

Flowers regular. Fertile stamens 5 . . . . *Geranium*, 57.
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XXI. Oxalideæ.

Oxalis, p. 58.

XXII. Zygophylleæ.

Rœpera, p. 59.

XXIII. Rutaceæ.

Corolla tubular, petals all united . . . . *Correa*, p. 61.
Petals free. Leaves simple, alternate. Filaments glabrous . . . . *Phebalium*, p. 63.
Petals free. Leaves simple, alternate. Filaments pilose . . . . *Eriostemon*, p. 64.
Petals free. Leaves 3-foliolate, opposite. Stamens 4 . . . . *Zieria*, p. 65.
Petals free. Leaves simple, or 3-foliolate, or pinnate, opposite. Stamens 8 . . . . . *Boronia*, p. 65.
Petals free. Leaves 3-foliolate, opposite Stamens 8–10 . . . . *Acradenia*, p. 68.

XXIV. Rhamneæ.

Spinous shrub. Disc very broad . . . *Discaria*, p. 69.
Leafy shrubs. Flowers bracteate. Stamens shorter than petals . . . *Cryptandra*, p. 70.
Leafy shrubs. Flowers ebracteate. Stamens longer than petals . . . *Pomaderris*, p. 76.

XXV. Stackhousieæ.

Stackhousia, p. 78, and Supplement, II. p. 359.

XXVI. Leguminosæ.

A. Flowers papilionaceous.
  1. Stamens all free.
    Ovules 4 or more. Pod ovate, turgid . . . *Oxylobium*, p. 80.
    Ovules numerous. Pod inflated, globose . . . *Gompholobium*, 81.
    Ovules 2. Pod with a straight upper and curved lower edge . . . *Daviesia*, p. 82.
      Pod ovoid. Seeds estrophiolate . . . *Aotus*, p. 83.
      Pod subglobose, stipitate . . . *Sphærolobium*, p. 84.
      Pod sessile, ovate, ventricose. Leaves exstipulate. Calyx ebracteate . . . *Dillwynia*, p. 84.
      Pod short, sessile. Leaves stipulate. Calyx bracteolate . . . *Pultenæa*, p. 86.
  2. Stamens all combined, or rarely (in *Hovea*) with the upper free.
    Pod rounded, inflated. Ovary 2-ovuled. Leaves alternate, simple . . . *Hovea*, p. 93.
    Pod long, stipitate. Ovary many-ovuled. Leaves alternate, simple . . . *Bossiæa*, p. 94.
    Pod linear-oblong. Ovary many-ovuled. Leaves opposite, simple . . . *Platylobium*, p. 96.
    Pod stipitate, oblique at base. Ovary few-ovuled. Leaves alternate, 3-foliolate . *Goodia*, p. 97.
  3. Stamens diadelphous. Ovary 1-ovuled . . . *Psoralea*, p. 99.
  4. Stamens diadelphous. Pod divided into cells by spongy tissue between the seeds.
    Herbs. Leaves 3-foliolate, stipules large. Pod long, terete . . . *Lotus*, p. 97.
    Shrub. Leaves pinnate. Stipules small. Pod long, terete . . . *Indigofera*, p. 99.
    Herbs. Leaves pinnate. Stipules deciduous. Pod ovate . . . *Swainsonia*, p. 100.
    Herb. Leaves 3-foliolate, stipulate. Pod separating into 1-seeded, indehiscent joints *Desmodium*, p. 100.
    Herb. Leaves 3-foliolate, stipulate. Pod entire. Flowers few, on axillary pedicels *Kennedya*, p. 101.
    Herbs. Leaves 3-foliolate, stipulate. Pod entire. Flowers capitate or racemose . *Leptocyamus*, p. 102.
    Almost shrubby. Leaves simple, coriaceous . . . *Hardenbergia*, II. p. 361.
B. Flowers not papilionaceous . . . *Acacia*, p. 103.

XXVII. Rosaceæ.

Fruit of small fleshy drupes . . . *Rubus*, p. 112.
Fruit of many dry achenia, with short styles . . . *Potentilla*, p. 113.
Fruit of many dry achenia, with long styles . . . *Geum*, p. 113.
Fruit of 1–2 achenia sunk in the calyx-tube . . . *Acæna*, p. 114.

XXVIII. Onagrarieæ.

Calyx-tube produced beyond the ovary. Seeds naked . . . *Œnothera*, p. 118.
Calyx-tube not produced. Seeds comose . . . *Epilobium*, p. 115.

XXIX. Halorageæ.

Terrestrial. Flowers hermaphrodite, tetramerous . . . *Haloragis*, p. 129.
Aquatic. Flowers unisexual. ♀ flowers naked. ♂ 4 petals . . . *Myriophyllum*, p. 120.

Aquatic. Flowers unisexual. ♀ Perianth multifid . . . . *Ceratophyllum*, Vol. II., p. 362.
Aquatic. Flowers hermaphrodite, dimerous . . . . *Meionectes*, p. 123.
Aquatic. Flowers unisexual, all naked. Stamen 1 . . . . *Callitriche*, p. 124.
Marshes. Flowers unisexual. Flowers dimerous . . . . *Gunnera*, p. 124.

XXX. Lythrarieæ.

Lythrum, p. 125.

XXXI. Myrtaceæ.

A. Corolla of 5 free petals.
- Ovary 1-celled, 2-ovuled. Calyx-lobes with setaceous tips . . . . *Calycothrix*, p. 126.
- Ovary 1-celled, 2–4-ovuled. Calyx-lobes with blunt tips . . . . *Thryptomene*, p. 127.
- Ovary 3-celled, ∞-ovuled. Stamens very long and numerous. Calyx sunk in the bark *Melaleuca*, p. 128.
- Ovary 2–3-celled, ∞-ovuled. Stamens very long and numerous. Flowers axillary, or forming terminal spikes . . . . *Kunzea*, p. 130.
- Ovary 3–5-celled, ∞-ovuled. Stamens very long and numerous. Flowers forming dense spikes in the middle of the branches . . . . *Callistemon*, p. 130.
- Ovary 4–5-celled. Stamens short, numerous . . . . *Leptospermum*, p. 138.
- Ovary many-celled. Stamens short, numerous . . . . *Fabricia*, p. 140.
- Ovary 2–5-celled. Stamens short, 5–10. Flowers small . . . . *Bæckia*, p. 141.

B. Petals and sepals combined into a deciduous pileus . . . . *Eucalyptus*, p. 131.

XXXII. Cucurbitaceæ.

Sicyos, p. 142.

XXXIII. Portulaceæ.

Petals forming a calyptra over the ovary . . . . *Calandrinia*, p. 143.
Petals 5, free. Seeds 3 or more . . . . *Claytonia*, p. 144.
Petals 5, free. Seeds 1 or 2 . . . . *Montia*, p. 144.

XXXIV. Crassulaceæ.

Tillæa, p. 146.

XXXV. Ficoideæ.

Petals numerous . . . . *Mesembryanthemum*, p. 146.
Petals none . . . . *Tetragonia*, p. 147.

XXXVI. Cunoniaceæ.

Tree. Petals 4. Stamens 8. Ovary 2-celled . . . . *Anodopetalum*, 148.
Shrub. Petals 6–10. Stamens ∞. Ovary 2-celled . . . . *Bauera*, p. 149.
Small shrub. Petals 4. Stamens 8. Ovaries 4 . . . . *Tetracarpæa*, p. 150.

XXXVII. Escallonieæ.

Anopterus, p. 151.

XXXVIII. Umbelliferæ.

Carpels of fruit 2, much laterally flattened, didymous.
- Stems creeping, branching . . . . . *Hydrocotyle*, p. 151.
- Stems erect, simple. Carpels with one curved ridge on each face . . . . . *Didiscus*, p. 154.
- Stems branched. Carpels with 3–4 slender ridges on each face . . . . . *Xanthosia*, p. 155.

Carpels of fruit 2, much dorsally flattened.
- Calyx without lobes . . . . . *Diplaspis*, p. 156.
- Calyx with petaloid lobes . . . . . *Dichopetalum*, p. 157.
- Calyx with 5 unequal teeth . . . . . *Gingidium*, Vol. II., p. 363.

Carpel solitary . . . . . *Hemiphues*, p. 157.

Carpels of fruit 2, each semiterete.
- Flowers in a dense ovoid capitulum . . . . . *Eryngium*, p. 159.
- Flowers on dichotomous scapes . . . . . *Microsciadium*, p. 158.
- Flowers in umbels. Leaves filiform . . . . . *Crantzia*, p. 160.
  - Leaves decompound, glabrous. Carpels glabrous . . . . . *Apium*, p. 160.
  - Leaves decompound, pilose. Carpels aculeate . . . . . *Daucus*, p. 161.
  - Leaves decompound, silky. Carpels silky . . . . . *Oreomyrrhis*, p. 161.

XXXIX. Araliaceæ.

Panax, p. 163.

XL. Caprifoliaceæ.

Sambucus, p. 164.

XLI. Rubiaceæ.

Calyx 4–5-lobed. Leaves opposite. Flowers unisexual, free . . . . . *Coprosma*, p. 165.
Calyx 4-lobed. Flowers unisexual, connate in dense capitula . . . . . *Opercularia*, p. 166.
Calyx 4-lobed. Flowers hermaphrodite, free . . . . . *Nertera*, p. 167.
Calyx-lobes 0. Leaves whorled. Corolla campanulate, or funnel-shaped . . . . . *Asperula*, p. 168.
Calyx-lobes 0. Corolla rotate . . . . . *Galium*, p. 169.

XLII. Compositæ.

A. Capitula with the outer florets ligulate (rayed), white, pink, or purplish, the inner tubular, yellow.
- *a.* Pappus long, rigid, scabrid.
  - Branched shrubs. Achenia not very long. Ray white . . . . . *Eurybia*, p. 172.
  - Scapigerous herbs. Achenia not very long. Ray white . . . . . *Celmisia*, p. 180.
  - Branched herbs. Achenia very long, flattened, and narrow . . . . . *Vittadinia*, p. 181.
  - Scapigerous, small herbs. Achenia elliptic-oblong, compressed. Ray purple . *Erigeron*, p. 182.
- *b.* Pappus of very short hairs or scales . . . . . *Brachycome*, p. 183.
- *c.* Pappus 0. Achenia erostrate . . . . . *Paquerina*, p. 188.
  - Pappus 0. Achenia rostrate . . . . . *Lagenophora*, p. 188.

B. Capitula with all the florets tubular, none ligulate (in *Cassinia*, *Ozothamnus*, *Helichrysum*, etc., the inner radiating involucral scales resemble ligulate flowers).
- *a.* Pappus of 2 rigid spines . . . . . *Nablonium*, p. 190.
- *b.* Pappus of 8 silvery scales . . . . . *Pumilo*, p. 199.
- *c.* Pappus of 6 flat, feathery scales . . . . . *Pterygopappus*, p. 207.
- *d.* Pappus none.
  - *α.* Flowers numerous. Corolla of outer ones 0, or imperfect . . . . . *Cotula*, p. 191.
    - Corolla of outer ones inflated . . . . . *Leptinella*, p. 192.
    - Corolla tubular mouth entire . . . . . *Myriogyne*, p. 194.

β. Flowers about 6; outer flowers 3-cleft . . . . *Trineuron*, Vol. II., p. 364.
γ. Flowers about 4; outer flowers 4-toothed . . . . *Sclerolæna*, p. 195.
e. Pappus of soft hairs (rather harsh in *Millotia*).
α. Capitula combined into a spherical head.
Leaves opposite. Stems branched . . . . *Calocephalus*, p. 196.
Leaves alternate. Stems branched . . . . *Leucophyte*, p. 196.
Scapigerous herbs . . . . *Craspedia*, p. 197.
Very minute herb . . . . *Skirrhophorus*, p. 198.
β. Capitula free.
1. Receptacle paleaceous.
Inner involucral scales stipitate and radiating . . . . *Podolepis*, p. 208.
Inner involucral scales erect. Paleæ of receptacle filiform . . . . *Apalochlamys*, p. 199.
Inner involucral scales erect. Paleæ of receptacle like inner involucral scales . . . . *Cassinia*, p. 200.
2. Receptacle without paleæ.
† Involucral scales in one series, erect.
Herbs. Involucral scales scarious. Pappus in 1 series. Small, slender plant . . *Millotia*, p. 209.
Herbs. Involucral scales herbaceous. Pappus in 1 series. Flowers yellow . . . *Senecio*, p. 221.
Herbs. Involucral scales herbaceous. Pappus in 2–3 series . . . . *Erechtites*, p. 218.
Shrubs. Involucral scales herbaceous . . . . *Bedfordia*, p, 223.
†† Involucral scales in several series, inner often radiating.
Pappus of few (10–12) hairs . . . . *Leptorhynchus*, p. 207.
Pappus of many hairs.
Branching shrubs. Involucral scales in many series . . . *Ozothamnus*, p. 200.
Tufted, alpine, woolly, sessile-flowered herb, with a white ray of involucral scales . . . . *Raoulia*, p. 206.
Herbs. Capitulum with white- or yellow-rayed involucres. Pappus scabrid . . . . *Helichrysum*, p. 210.
Herbs. Capitulum with white- or yellow-rayed involucres. Pappus plumose . . . . *Helipterum*, p. 214.
Herbs. Involucre not rayed . . . . *Gnaphalium*, p. 215.
C. Capitula yellow, the inner florets tubular, the outer with long rays.
Herb. Involucral scales in many series . . . . *Cymbonotus*, p. 225.
Shrub. Involucral scales in one series . . . . *Centropappus*, p. 225.
Herbs. Involucral scales in one series . . . . *Senecio*, p. 221.
D. Capitula yellow. All the florets ligulate.
Pappus paleaceous. Achenium smooth . . . . *Microseris*, p. 226.
Pappus soft. Achenium transversely rugose . . . . *Picris*, p. 227.
Pappus soft. Achenium flattened, smooth . . . . *Sonchus*, p. 227.

XLIII. Brunoniaceæ.

Brunonia, p. 229.

XLIV. Goodenovieæ.

Fruit indehiscent. Calyx-limb 0. Ovary 1-celled, cell 1-ovuled . . . . *Dampiera*, p. 230.
Fruit indehiscent. Calyx 5-lobed. Ovary 2–4-celled, cells 1-ovuled . . . . *Scævola*, p. 230.

Fruit indehiscent. Calyx 5-lobed. Ovary 2-celled, many-ovuled . . . . *Selliera*, p. 231.
Fruit dehiscent, capsular. Calyx superior . . . . *Goodenia*, 231.
Fruit dehiscent, capsular. Calyx inferior . . . . *Velleia*, p. 233.

XLV. Stylidieæ.

Corolla irregular. Column declinate . . . . *Stylidium*, p. 234.
Corolla regular. Column erect . . . . *Forstera*, p. 236.

XLVI. Lobeliaceæ.

Lobelia, p. 236.

XLVII. Campanulaceæ.

Wahlenbergia, p. 239.

XLVIII. Ericeæ.

Calyx baccate. Capsules dry. Anthers 2-aristate . . . . *Gaultheria*, p. 240.
Calyx simple. Fruit baccate . . . . *Pernettya*, p. 242.

XLIX. Epacrideæ.

A. Fruit an indehiscent drupe, berry, or nut. Ovules solitary in each cell.
1. Fruit a 2–10-celled drupe.
α. Corolla with 5 tufts of hairs inside at the base.
Corolla-tube cylindric. Disc of 5 glands . . . . *Styphelia*, p. 243.
Corolla-tube ventricose. Disc cup-shaped . . . . *Astroloma*, p. 243.
β. Corolla naked inside at the base.
Bracts removed from base of calyx . . . . *Lissanthe*, p. 247.
Bracts appressed to calyx.
Tube of corolla slender . . . . *Stenanthera*, p. 244.
Tube of corolla infundibuliform or cylindric.
Bracts numerous . . . . *Cyathodes*, p. 244.
Bracts generally 2.
Lobes of corolla each with a pencil of hairs at apex . . . . *Acrotriche*, p. 252.
Lobes of corolla villous and bearded . . . . *Leucopogon*, p. 248.
2. Fruit a drupe, 1-celled, 1-ovuled . . . . *Monotoca*, p. 252.
3. Fruit a berry, with 5 nuts . . . . *Pentachondra*, p. 254.
4. Fruit a berry, with 10 nuts . . . . *Decaspora*, p. 253.
B. Fruit capsular, many-seeded.
1. Leaves not sheathing at the base.
Bracts numerous . . . . *Epacris*, p. 256.
Bracts 0. Anthers 2-celled. Placenta pendulous . . . . *Prionotes*, p. 262.
Bracts 0. Anthers 1-celled. Placenta erect . . . . *Archeria*, p. 262.
2. Leaves sheathing at the base.
Corolla rotate . . . . *Sprengelia*, p. 264.
Corolla calyptrate. Calyx bracteate. Hypogynous scales 0 . . . . *Cystanthe*, p. 265.
Corolla calyptrate. Calyx bracteate. Hypogynous scales 5, bilobed . . . . *Pilitis*, p. 265.
Corolla campanulate . . . . *Dracophyllum*, II.

L. Oleineæ.

Notelæa, p. 268.

LI. Apocyneæ.

Calyx eglandular. Drupes 1 or 2 . . . . *Alyxia*, p. 269.
Calyx glandular. Follicles 2 . . . . *Lyonsia*, p. 269.

LII. Gentianeæ.

Corolla tubular or salver-shaped. Leaves opposite.
  Calyx-lobes keeled or winged. Styles 2. Anthers twisted . . . . *Sebæa*, p. 270.
  Calyx-lobes even. Style 1. Anthers twisted . . . . *Erythræa*, p. 270.
  Calyx-lobes even. Style 0. Anthers not twisted . . . . *Gentiana*, p. 271.
Corolla rotate, its lobes bearded at the base. Leaves alternate . . . . *Villarsia*, p. 272.
Corolla rotate, its lobes glabrous . . . . *Liparophyllum*, p. 273 & Vol. II. p. 368.

LIII. Loganiaceæ.

Mitrasacme, p. 273.

LIV. Convolvulaceæ.

Calyx 5-partite, ebracteate or with small bracts.
  Leafless twining parasite . . . . *Cuscuta*, p. 278.
  Tufted creeping herb, with rotate corolla . . . . *Dichondra*, p. 277.
  Slender prostrate herb, with infundibuliform corolla . . . . *Convolvulus*, p. 275.
Calyx 5-partite, with large bracts . . . . *Calystegia*, p. 276.
Calyx urceolate, 5-toothed . . . . *Wilsonia*, p. 276.

LV. Boragineæ.

Nuts 4, elliptic, perfectly smooth and shining . . . . *Myosotis*, p. 278.
Nuts 4, depressed, hispid or echinate . . . . *Cynoglossum*, p. 279.

LVI. Labiatæ.

Leaves whorled . . . . *Westringia*, p. 284.
Leaves opposite.
  Stamens 4, equal, exserted . . . . *Mentha*, p. 279.
  Stamens 4, the 2 upper filaments bearing only capitate tips (not anthers) . . . . . *Lycopus*, p. 280.
  Stamens 4, unequal.
    Anther-lobes free, divaricating.
      Calyx with a broad, flat, adnate lobe on upper lip . . . . *Scutellaria*, p. 282.
      Calyx upper lip simple . . . . *Prunella*, p. 281.
    Anther-lobes free, parallel . . . . *Prostanthera*, p. 283.
    Anther-lobes confluent.
      Upper lip of corolla small, of 2 reflexed lobes . . . . *Teucrium*, p. 285.
      Upper lip of corolla very minute . . . . *Ajuga*, p. 286.

LVII. Myoporineæ.

Myoporum, p. 286.

LVIII. Solaneæ.

Solanum, p. 287.

LIX. Scrophularineæ.

Leaves alternate . . . . *Anthocercis*, p. 289.
Leaves opposite.
  Stamens 2. Calyx 4-partite . . . . *Veronica*, p. 293.
  Stamens 2, or if 4, upper filaments capitate. Calyx 5-partite . . . . *Gratiola*, p. 291.
  Stamens 4, all fertile.
    Creeping herb. Style of 2 lamellæ . . . . *Mimulus*, p. 289.
    Scapigerous herb. Style of 2 lamellæ . . . . *Mazus*, p. 290.
    Creeping water-herb. Style of 1 lamella . . . . *Glossostigma*, p. 292.
    Creeping water-herb. 1 sessile stigma . . . . *Limosella*, p. 292.
    Herbs, with long style and capitate stigma.
      Anther-cells not mucronate . . . . *Ourisia*, p. 295.
      Anther-cells mucronate . . . . *Euphrasia*, p. 296.

LX. Lentibularineæ.

Calyx 2-lipped . . . . *Utricularia*, p. 298.
Calyx 4-partite . . . . *Polypompholyx*, p. 300.

LXI. Primulaceæ.

Samolus, 300.

LXII. Plumbagineæ.

Statice, p. 301.

LXIII. Plantagineæ.

Plantago, p. 301.

LXIV. Polygoneæ.

Perianth 6-lobed, in 2 rows, enlarging in fruit . . . . *Rumex*, p. 305.
Perianth 4–5-partite, lobes not enlarging . . . . *Polygonum*, p. 306.
Perianth 5-partite, baccate in fruit . . . . *Muehlenbeckia*, p. 307.

LXV. Phytolacceæ.

Didymotheca, p. 309.

LXVI. Amaranthaceæ.

Perianth 3-bracteate, plumose. Style long . . . . *Trichinium*, p. 310.
Perianth 3-bracteate, glabrous. Style short . . . . *Alternanthera*, p. 311.
Perianth 2-bracteate. Style short . . . . *Hemichroa*, p. 312.

LXVII. Chenopodiaceæ.

Fleshy, leafless, jointed, saline herbs . . . . *Salicornia*, p. 316.
  Leafy herbs or shrubs.
    Perianth 3–5-partite, ebracteate.
      Suffruticose. Seed adherent to utriculus . . . . *Rhagodia*, p. 312.
      Herbaceous. Seeds free . . . . *Chenopodium*, p. 313.
    Perianth of ♂ 3–5-partite, ebracteate. ♀ flowers with 2 large bracts . . . . *Atriplex*, p. 314.
    Perianth urceolate, baccate, truncate, gibbous . . . . *Threlkeldia*, p. 315.
    Perianth urceolate, fleshy, 5-partite . . . . *Suæda*, p. 315.

LXVIII. Laurineæ.

Cassytha, p. 317.

LXIX. Proteaceæ.

Flowers in dense cones or heads.
- Cones ebracteate, cylindrical . . . . . *Banksia*, p. 328.
- Cones globose or oblong, with numerous imbricating bracts . . . . . *Isopogon*, p. 319.
- Head a dense, involucrate corymb . . . . . *Telopea*, p. 327.
- Head a rather dense naked corymb . . . . . *Conospermum*, p. 318.

Flowers spiked. Perianth regular.
- Stamens on middle of segments. Hypogynous glands 0 . . . . . *Agastachys*, p. 320.
- Stamens on middle of segments. Hypogynous glands 4 . . . . . *Orites*, p. 325.
- Stamens at base of segments. Hypogynous glands 4 . . . . . *Cenarrhenes*, p. 320.
- Stamens hypogynous. Hypogynous glands 0 . . . . . *Bellendena*, p. 321.

Flowers racemose or axillary. Perianth regular . . . . . *Persoonia*, p. 320.

Flowers racemose or axillary. Perianth irregular.
- Hypogynous gland 1 or 0. Style persistent. Ovules 2 . . . . . *Grevillea*, p. 322.
- Hypogynous gland 1. Style deciduous. Ovules 2 . . . . . *Hakea*, p. 323.
- Hypogynous glands 3. Style persistent. Ovules many . . . . . *Lomatia*, p. 327.

LXX. Thymeleæ.

Stamens 4 . . . . . *Drapetes*, p. 330.
Stamens 1–2 . . . . . *Pimelea*, p. 330.

LXXI. Santalaceæ.

Leafless trees or shrubs. Peduncle of fruit red, swollen . . . . . *Exocarpus*, p. 335.
Leafless shrubs, with baccate fruit . . . . . *Leptomeria*, p. 336.
Slender herb, with linear leaves . . . . . *Thesium*, p. 337.

LXXII. Euphorbiaceæ.

Flowers with calyx and corolla. Filaments combined . . . . . *Ricinocarpus*, p. 338.
Flowers with calyx and corolla. Filaments free . . . . . *Poranthera*, p. 342.

Perianth single.
- Stamens numerous. Stigma sessile, discoid . . . . . *Beyeria*, p. 339.
- Stamens numerous. Styles 3, bipartite . . . . . *Bertya*, p. 339.
- Stamens 8. Styles 3, bipartite . . . . . *Amperia*, p. 340.
- Stamens 3–6. Filaments connate . . . . . *Phyllanthus*, p. 341.
- Stamens 3–6. Filaments free . . . . . *Micranthea*, p. 341.

LXXIII. Urticeæ.

Female perianth 4–5-partite. Stamens 4–5 . . . . . *Urtica*, p. 343.
Female perianth tubular, 4-fid. Stamens 4–5 . . . . . *Parietaria*, p. 344.
Female perianth tubular, mouth entire. Stamen 1 . . . . . *Australina*, p. 345.

LXXIV. Cupuliferæ.

Fagus, p. 346.

LXXV. Casuarineæ.

Casuarina, p. 347.

LXXVI. Coniferæ.

See Clavis of Genera, p. 351.

MONOCOTYLEDONES.

I. Orchideæ.

See Clavis of Genera, Vol. II. p. 2; and add *Dendrobium*, from Supplement, p. 372.

II. Irideæ.

Perianth with a slender tube . . . . *Patersonia*, p. 33.
Perianth sessile on the ovary. Stamens 2, fertile . . . . *Diplarrhena*, p. 34.
Perianth sessile on the ovary. Stamens 3, fertile . . . . *Libertia*, p. 35.

III. Hæmodoraceæ.

Hæmodorum, p. 35.

IV. Hypoxideæ.

Hypoxis, p. 36.

V. Hydrocharideæ.

Vallisneria, p. 37.

VI. Pistiaceæ.

Lemna, p. 37.

VII. Typhaceæ.

Typha, p. 38.

VIII. Alismaceæ.

Perianth 6-leaved, naked . . . . *Triglochin*, p. 39.
Perianth 4-leaved, naked . . . . *Potamogeton*, p. 41.
Perianth 0, or scales. Flowers naked. Ovaries 4, sessile . . . . *Ruppia*, p. 42.
Perianth 0, or scales. Flowers naked. Ovaries 4, stalked . . . . *Zannichellia*, p. 42.
Perianth 0. Flowers in spathes. Ovary 1 . . . . *Posidonia*, p. 43.
Perianth 0. Flowers naked, crowded on a flat spadix. Stamen 1 . . . . *Zostera*, p. 44.
Perianth 0. Flowers pedicelled, solitary, axillary, spathed. Stamens 2 . . . . . . *Cymodocea*, p. 44.
Perianth 0. Flowers in a diphyllous spathe. Stamens 3, with connate filaments . . . *Halophila*, p. 45.

IX. Melanthaceæ.

Perianth superior . . . . *Campynema*, p. 47.
Perianth inferior. Flowers umbellate . . . . *Burchardia*, p. 45.
Perianth inferior. Flowers spicate . . . . *Anguillaria*, p. 46.
Perianth inferior. Flowers solitary, triandrous . . . . *Hewardia*, p. 47.

X. Smilaceæ.

Drymophila, p. 48.

XI. Liliaceæ.

Fruit capsular, dehiscent. Style 1.
  Ovary stipitate. Flowers large, red . . . . *Blandfordia*, p. 49.
  Flowers white, dense, in cylindric amenta . . . . *Xanthorrhœa*, p. 58.
  Flowers in small, peduncled capitula . . . . *Laxmannia*, p. 59.

Flowers solitary, in 2 spathes . . . . . *Herpolirion*, p. 54.
Flowers solitary. Leafless twining herbs . . . . . *Thysanotus*, p. 53.
Flowers umbellate. Fruit of clavate 1-seeded lobes . . . . . *Tricoryne*, p. 54.
Flowers umbellate. Capsule 3-celled . . . . . *Stypandra*, p. 55.
Flowers racemose or panicled.
Flowers white or purple. Pedicel jointed in middle . . . . . *Arthropodium*, p. 50.
Flowers yellow. Pedicels not jointed . . . . . *Bulbine*, p. 51.
Flowers white or blue. Pedicels jointed at apex . . . . . *Cæsia*, p. 52.
Fruit capsular, dehiscent. Styles 3 . . . . . *Milligania*, p. 61.
Fruit indehiscent. Style 1.
Fruit of 3 indehiscent clavate lobes . . . . . *Tricoryne*, p. 54.
Fruit a globular berry. Flowers blue. Filaments tumid . . . . . *Dianella*, p. 56.
Fruit an oblong berry. Flowers white. Filaments simple . . . . . *Astelia*, p. 60.

XII. Junceæ.

Flowers unisexual. Anthers peltate . . . . . *Xerotes*, p. 63.
Flowers hermaphrodite. Anthers linear. Seeds many . . . . . *Juncus*, p. 63.
Flowers hermaphrodite. Anthers linear. Seeds 3 . . . . . *Luzula*, p. 68.

XIII. Xyridæ.

Xyris, p. 69.

XIV. Restiaceæ.

Perianth of 4–6 leaves or scales.
Stamens 4–6 . . . . . *Restio*, p. 70.
Stamens 3. Flowers fascicled or amentaceous. Ovary 3-locular . . . . . *Lepyrodia*, p. 72.
Stamens 3. Flowers fascicled or amentaceous. Ovary 1-locular. Perianth ☿ longer than nut *Leptocarpus*, p. 72.
Stamens 3. Flowers fascicled or amentaceous. Ovary 1-locular. Perianth ♀ shorter than nut *Hypolæna*, p. 74.
Stamens 3. Flower solitary, axillary . . . . . *Calorophus*, p. 75.
Perianth 0. Flowers in scales or spathes.
Spike solitary, of distichous scales . . . . . *Aphelia*, p. 75.
Capitulum solitary, with 2 spathes. Flowers with numerous paleæ . . . . . *Centrolepis*, p. 76.
Capitulum solitary. Flowers few, with 1 or 0 palea . . . . . *Alepyrum*, p. 77.
Capitulum solitary, with a 4-leaved involucre . . . . . *Trithuria*, p. 78.

XV. Cyperaceæ.

I. Nut free, not enclosed in a flagon-shaped utriculus.
A. Spikelets flattened, with many distichous scales.
Hypogynous scales or bristles 0.
All the scales equal and (generally) floriferous . . . . . *Cyperus*, p. 79.
Lower scales smaller, empty . . . . . *Schœnus*, p. 80.
Hypogynous bristles 3 or more.
Spikelets aggregated in a globose capitulum . . . . . *Gymnoschœnus*, p. 83.
Spikelets solitary or fascicled . . . . . *Chætospora*, p. 81.
B. Spikelets flattened or terete, with many flowers and scales imbricated all round.

Hypogynous scales or bristles 4 or more.
Spikelets terminal, solitary . . . . . *Eleocharis*, p. 85.
Spikelets lateral, fascicled . . . . . *Scirpus*, p. 89.
Hypogynous scales 0. Scales of spike entire . . . . . *Isolepis*, p. 85.
Hypogynous scales 0. Scales trifid or lobed . . . . . *Chorizandra*, p. 83.
C. Flower solitary. (No spikelet) . . . . . *Oreobolus*, p. 93.
D. Spikelet of several scales, imbricating all round, but with only 1–3 flowers.
Hypogynous scales 6, minute, coriaceous . . . . . *Lepidosperma*, p. 90.
Hypogynous scales, long plumose . . . . . *Carpha*, p. 84.
Hypogynous scales 0.
Filaments not elongated after flowering. Culms simple . . . . . *Cladium*, p. 94.
Filaments not elongated after flowering. Culms branched . . . . . *Caustis*, p. 98.
Filaments 3–6, elongated and persistent . . . . . *Gahnia*, p. 97.
II. Nut enclosed in a flagon-shaped utriculus.
Utriculus with an exserted hooked bristle . . . . . *Uncinia*, p. 102.
Utriculus without an exserted hooked bristle . . . . . *Carex*, p. 98.

XVI. Gramineæ.

I. Glumes 2, containing 1 flower.
Spikelets in a dense soft cylindric spike . . . . . *Alopecurus*, p. 109.
Spikelets in a dense head bristling with awns . . . . . *Echinopogon*, p. 117.
Spikelets panicled.
Flowers stipitate, with one long rigid twisted terminal awn, jointed at the base . *Stipa*, p. 109.
Flowers shortly stipitate, with one long awn from below the apex of the palea . . *Dichelachne*, p. 111.
Flowers stipitate, with 5 awns . . . . . *Pentapogon*, p. 112.
Flowers sessile, with no awn, or a dorsal one. Glumes not awned . . . . . *Agrostis*, p. 113.
Flowers sessile, with no awn, or a dorsal one. Glumes awned . . . . . *Polypogon*, p. 117.
II. Glumes 2. Containing 2 or more flowers. All paleæ floriferous, or upper empty.
Spikelets alternate, spiked . . . . . *Triticum*, p. 128.
Spikelets in a dense cylindric shining spike . . . . . *Kœleria*, p. 125.
Spikelets panicled.
Flowers 3–6, silky, remote, lowest ♀, rest ⚥ . . . . . *Phragmitis*, p. 118.
Flowers 3, 2 lateral ♀, intermediate ⚥ . . . . . *Hierochloe*, p. 107.
Flowers all (or always lower) hermaphrodite.
Flowers 2–3, glabrous, shining. Lower palea awned above the base . . . . *Deschampsia*, p. 118.
Flowers 2–3, puberulous. Lower palea bifid, with a twisted awn at the back . *Trisetum*, p. 119.
Flowers 2–8. Lower palea (often with pencils of hairs) deeply bifid with a flattened (at base) twisted awn . . . . . *Danthonia*, p. 120.
Flowers numerous, awnless. Glumes and paleæ blunt. Squamulæ 1 or 2 connate *Glyceria*, p. 122.
Flowers 2–8, awnless. Glumes and paleæ blunt. Squamulæ 2 . . . . . *Poa*, p. 123.
Flowers 2–8. Glumes and paleæ acute, lower often awned at apex . . . . *Festuca*, p. 126.
III. Glumes 2, 1–2-flowered. Lower paleæ empty.
A. Spikelets panicled. Flowers sessile. Glumes 2, large, 1-flowered. Stamens 4 . *Tetrarrhena*, p. 103.
Flowers sessile. Glumes 2, small. Stamens 4 . . . . . *Microlæna*, p. 104.
Flowers stipitate. Glumes 2, small. Stamens 2 . . . . . *Diplax*, p. 105.
B. Spikelets sessile on a simple, slender-jointed rachis . . . . . *Hemarthria*, p. 107.
C. Spikelets collected into large globose spiny heads. (Rigid Maritime-grass) . . *Spinifex*, p. 106.
D. Spikelets in panicled fascicles with very long stout awns. (Kangaroo-grass) . . *Anthistiria*, p. 106.

FLORA OF TASMANIA.

Class MONOCOTYLEDONES.

Nat. Ord. I. ORCHIDEÆ.

One of the most beautiful and interesting Natural Orders of Australia, abundant in the extratropical latitudes of that continent, and especially in Tasmania, but extremely rare in the tropical. The great majority are terrestrial and tuberous-rooted, but there are a few epiphytical ones, all belonging to the tribe *Vandeæ*, on the warm and tropical eastern coasts, and one inhabits Tasmania which has been found nowhere else. About 200 Australian *Orchideæ* are known, which are, with few exceptions, endemic. The exceptions are *Spiranthes australis* (S. Novæ-Zelandiæ, *mihi*), found in New Zealand, India, and other countries; a *Prasophyllum*, also found in New Zealand, where a Tasmanian species of *Thelymitra* and of *Caladenia* probably also occur, but these have not been satisfactorily identified. Considerably more than half the Australian Orchids, about 120 species, are confined to the east coast and Tasmania, about 60 being confined to the western, and 15 or 20 are common to the south-eastern and south-western quarters of the continent. Tasmania contains 74 species, all but 8 of which have been found on the neighbouring continent, though of these some are peculiar to it and south-western Australia.

The difficulties attending the analysis and discrimination of the plants of this Natural Order are proverbially great, and the Tasmanian Orchids have proved proportionally more troublesome than any other Natural Order, partly from Mr. Brown having found few of them in Tasmania, and partly from Gunn's splendid series of specimens being accompanied by fewer remarks than usual.

On the other hand I have derived the greatest assistance from Mr. Archer's drawings, notes, and specimens, as well as from his intimate acquaintance with the living plants; his beautiful drawings and dissections are, with his kind permission, and at his expense, lithographed for this Work by Mr. Fitch; and I can only add, that but for his having afforded me the benefit of his accurate knowledge of the species, I should in several cases have failed to discriminate them aright, and in other cases, where I had properly discriminated, to have selected their most important diagnostic characters.

I am also greatly obliged to Dr. Lindley for his ever ready advice and assistance, and for the use of his Herbarium, containing all of Gunn's collections that were published in his valuable 'Genera and Species of Orchideæ.'

To facilitate the recognition of the Tasmanian *Orchideæ*, I give a clavis of the genera, founded on the most prominent characters these present; but a tyro will find it exceedingly difficult to make out any satisfactorily until he has acquired some general knowledge of the majority.

A. *Anther deciduous, terminal. Pollen waxy.* (Vandeæ).

1. Gunnia.—An epiphyte, with long, tortuous, aerial roots, distichous falcate leaves jointed near the base, and a simple raceme of yellow, sweet-scented flowers (p. 32).
2. Dipodium.—A terrestrial, leafless herb, with a large erect raceme of rose-coloured, spotted flowers. Sepals and petals revolute at the apex (p. 32).

B. *Anther deciduous, terminal. Pollen granular.* (Gastrodieæ.)

3. Gastrodia.—A leafless, dirty-white or pale-brown herb, with a fleshy tuberous root, a stem with sheathing scales, and few-flowered raceme of whitish drooping flowers, whose sepals and petals are united into a tubular, ventricose, 5-toothed perianth (p. 31).

C. *Anther deciduous, terminal. Pollen powdery.* (Arethuseæ.)

α. *Labellum anticous.*

4. Microtis.—Slender, erect herbs, with tuberous roots at the base of the stem, narrow linear leaves, crowded spikes of very minute green flowers (p. 24).
5. Acianthus.—Small, slender, delicate plants, with long-pedicelled tubers at the base of the stem, one sessile cordate leaf on the stem, and a few racemose brownish flowers, with long points to the sepals and petals (p. 25).
6. Cyrtostylis.—Similar to *Acianthus*, but with the column dilated at the apex (p. 25).
7. Chiloglottis.—Small herbs, with long underground roots, each terminating in a tuber; two sessile leaves at the base of the scape, and one (rarely two) terminal reddish-brown and green flower, whose labellum bears large, pedicelled, capitate, dark red-brown glands (p. 23).
8. Eriochilus.—A very slender herb, with a long underground root terminated by a naked tuber, one sessile ovate leaf on the scape, and small greenish-white pubescent flowers, having the lateral sepals unguiculate (p. 26).
9. Caladenia.—Slender, often beautiful herbs, mostly covered with glandular pubescence or long hairs, having a long underground root terminated by a coated tuber, one linear or oblong radical leaf, and a 1–2-flowered scape; flowers often large, with spreading narrow segments, and the labellum studded with pedicelled glands (p. 26).
10. Glossodia.—Small pilose herbs, with the general characters of *Caladenia*, but differing in the labellum being sessile, having no glands, but an erect projection at the very base, close to the column (p. 31).
11. Pterostylis.—Pale-green, slender, often membranous herbs, with a long underground root terminated by a naked tuber, radical or alternate cauline leaves or none, and solitary or racemose green transparent flowers. Upper sepal galeate. Labellum irritable. Column very long, with auricled wings at the top, and the stigma halfway down its face (p. 18).
12. Corysanthes.—A small, singular-looking plant, with a long underground root terminated by a naked tuber; one sessile, broad, cordate leaf, and one almost sessile red-brown flower as large as the leaf, with a very large galeate dorsal sepal, and larger, cucullate, fimbriated labellum. Anther one-celled (p. 15).
13. Burnettia.—A very small, stout herb, 2 inches high, with a few alternate leaves, and one or two erect flowers, nearly equal sepals and petals, with involute margins, and a short, broadly-cuneate, papillose labellum (p. 16).

β. *Labellum posticous.*

14. Lyperanthus.—A short, stout, rather fleshy herb, with a long underground root terminated by a naked tuber, several leaves at the base of the scape, and red-brown racemose flowers. Sepals spreading. Labellum posticous, with crenulate margins (p. 16).

15. Caleana.—An erect, slender herb, with a fibrous underground root terminated by a naked tuber, one linear leaf, a long scape, few rather large fuscous-green flowers, which have the irritable labellum shaped like a hammer, with the head placed over the flower (p. 8).

D. *Anther persistent, at the back of and parallel to the column, or sunk in a deep notch of the column, its apex pointing forwards and upwards. Pollen powdery.* (Neottieæ.)

α. *Labellum anticous.*

15. Thelymitra.—Stout or slender herbs, with one linear leaf, and one- or a few-flowered raceme of flowers, whose petals, sepals, and labellum are nearly equal and similar: the labellum without glands (p. 3).

16. Diuris.—Generally tall, slender herbs, with several linear radical leaves and few-flowered racemes, linear lateral sepals placed below the three-lobed labellum, and a petaloid staminodium on each side of the base of the column (p. 6).

17. Calochilus.—A stout, erect herb, with leafy stem, a spike generally of reddish-brown flowers, which have the labellum beautifully fringed with long purple hairs (p. 14).

18. Spiranthes.—A slender, leafy herb, with a few linear leaves, and twisted spike of small pink flowers (p. 14).

β. *Labellum posticous.*

19. Prasophyllum.—Slender or stout herbs, leafy or leafless, bearing two sessile coated tubers, and spikes of small greenish-yellow or purple flowers. Column short, with the margins expanded into staminodia (p. 9).

20. Cryptostylis.—A tall, slender herb, with one radical, petioled, linear-lanceolate, coriaceous leaf, and a few-flowered spike of rather large red-brown flowers (p. 8).

Tribe I. Neottieæ.

Gen. I. THELYMITRA, *Forst.*

Perianthium regulare, foliolis omnibus (labello incluso) conformibus. *Labellum* sessile, nudum. *Columna* bifida, cucullata, trifida, lobo medio emarginato v. trifido, lateralibus porrectis crenatis v. in appendicem apice plumosam productis. *Anthera* persistens, lobo medio columnæ inserta, stigmate libero parallela, inclusa v. semiexserta, bilocularis. *Pollinia* 4, stigmatis glandulæ affixa.—Herbæ; radicibus *plerumque bituberculatis; folio lineari (rarius lanceolato), sæpissime solitario;* scapo 2–3-*bracteato, apice* 1–6-*floro;* floribus *albis cæruleis carneis purpurascentibus flavidisve, sub sole apertis, tempore nebuloso clausis.*

This genus may be distinguished at once by the segments of the perianth and sessile labellum being nearly all equal and similar, and by the column forming a rather membranous hood, which encloses the suberect anther. It abounds in extratropical Australia and New Zealand, but is very rare in tropical Australia. and, except one species found in the lofty mountains of Java, none are known to inhabit other countries but those mentioned, though some will no doubt be found in New Caledonia, etc. In the 'New Zealand Flora' I have alluded to the extreme difficulty, if not impossibility, of characterizing the forms of the genus in that country, and there is not less difficulty with regard to some of the Australian ones. Of these Brown enumerates ten, and Lindley twenty-nine (including *Macdonaldia*).

The Tasmanian species, of which Brown had one only, may be reckoned at seven, according to Mr. Archer's and my opinion. Of these, four belong to the very distinct section *Macdonaldia*, which has no plumose appendages to the column, and are very distinct from one another (though it is sometimes difficult to discriminate *dried* specicimens of *T. carnea* and *T. venosa* from small forms of *T. nuda* and *ixioides*). The other three are all extremely variable in size and many minor points, but are, I think, easily referable to *T. nuda*, *angustifolia*, and *ixioides*. Of these three species, *T. ixioides* has the middle lobe of the column truncate, trifid, laciniated, or crested, and shorter than the lateral feathery lobes; in *T. nuda* it is hooded, notched or bilobed, and higher than the lateral

feathery lobes; and in *T. angustifolia* it is somewhat similar, but with the lobes crenate. The two former of these vary extremely in size and habit, from a slender, thread-like, one-flowered herb, 6 inches high, to a tall, stout herb, 18–24 inches high, with six or seven flowers. The other species (*T. angustifolia*) does not vary so much in form and stature, being usually larger, stouter, and with larger flowers and leaves, but a good deal in the apex of the column, whose lobes are crenate, toothed, or fimbriate, long or short, broad or narrow, and whose lateral lobes with feathery apices are sometimes quite erect, and much longer than at others.

How far a local botanist may be able to discriminate some of these forms of *ixioides* and *nuda* in various parts of the colony (and in South-eastern Australia, where they are all very abundant), it is impossible for me to say; but, after a very diligent study of the column of all Gunn's specimens, and of a most beautiful selected series of Archer's, accompanied with coloured drawings, and dissections of varieties of them, both Mr. Archer and myself have come to the conclusion that the above is a near approximation to the actual number of well-marked forms existing in Tasmania. (Name from θελυμιτρα, in allusion to the hooded column; that of *Macdonaldia* was given in honour of *Mrs. Macdonald Smith.*)

§ 1. Macdonaldia.—*Column bifid at the apex, its sides not produced into toothed or feathery arms. Anther projecting, generally more or less granular or villous.*

1. **Thelymitra antennifera** (Hook. fil.); caule flexuoso 1–2-floro, floribus amplis flavis, columnæ apice bifido lobis carnosis cuneato-obcordatis purpureis, lateralibus nullis, anthera acuminata villosa.—Macdonaldia antennifera, *Lindl. Bot. Reg. App. n.* 217. *t.* 9 *C.*; *Gen. et Sp. Orchid.* 385; *Endl. in Pl. Preiss.* ii. 4. (Tab. CI. *A.*)

Hab. Moist ground near Georgetown, *Archer.*—(Fl. Oct., Nov.)

Distrib. South coast of Australia, from Victoria to Swan River.

A very beautiful little plant, 4–8 inches high, slender, the scape with a double flexure, and two lanceolate bracts, one below each flexure.—*Leaf* narrow, linear. *Floral bracts* obtuse. *Flowers* ⅔–1 inch across, pale or deep yellow, relieved by the bifid apex of the column, which is produced into two small purple obcordate appendages. *Segments* of the perianth variable in shape from linear-oblong to broadly elliptical-oblong, acute or almost obtuse.—Plate CI. *A.* Fig. 1, section of leaf; 2, side view of column; 3, front view of ditto; 4, the same, vertically cut; 5, hairs of anther:—*all magnified.*

2. **Thelymitra Smithiana** (Hook. fil.); caule flexuoso 1–2-floro, floribus parvis flavis, columnæ apicis lobis 2 brevibus rotundatis, lateralibus nullis, anthera obtusa villosa.—Macdonaldia concolor, *Gunn, MSS.*; *Lindl. in Bot. Reg. App. n.* 217. *t.* 9 *B.*; *Endl. in Pl. Preiss.* ii. 4; *Lindl. Gen. et Sp. Orchid.* 385. Thelymitra concolor, *Lindl. l. c.* T. flexuosa, *Endl. Decad.* 29. (*Gunn*, 945.) (Tab. CI. *B.*)

Hab. Sandy soil near Circular Head, *Mrs. Smith*; Georgetown, abundant, *Archer.*—(Fl. Oct., Nov.)

Distrib. South-western Australia.

Similar in habit to *T. antennifera*, and with the same double flexure of the scape, but the bracts on the scape are longer, almost leafy, and the flowers very much smaller, not ⅔ inch across.—*Segments* of the perianth pale-yellow, tinged with pink externally. *Apex* of column with two blunt lobes. *Anther* villous, blunt.—Plate CI. *B.* Fig. 1, section of leaf; 2, lateral, and 3, front view of column; 4, hairs of anther:—*all magnified.*

3. **Thelymitra venosa** (Br. Prodr. 314); caule strictiusculo 1–3-floro, floribus cyaneis venosis, perianthio connivente, columnæ apicis lobis linearibus involutis, lateralibus nullis, anthera apice biloba basi papillosa.—Macdonaldia cyanea *et* M. venosa, *Lindl. Bot. Reg. App.* 217; *Gen. et Sp. Orchid.* 386. (*Gunn*, 938, 944.) (Tab. CII. *A.*)

Hab. Moist ground, flooded in winter. Circular Head and Rocky Cape, *Gunn*; Cheshunt and Port Sorrell, *Archer.*—(Fl. Dec.)

DISTRIB. New South Wales and Victoria.

A very different-looking species from the preceding, larger, taller, with more campanulate bright blue flowers, the scape usually without flexures.—*Stem* 1–2 feet high. *Bracts* two, appressed, with short laminæ; upper outer segment of perianth shorter than the inner, two lower longer. *Lip* obovate, rather expanded. *Column* with its bifid apices linear, involute, notched at the tips. *Anther* with an acuminate bifid apex and papillose base.—This varies with white and blue flowers. Lindley describes *T. venosa*, from Bauer's drawings, as having serrulate segments of the perianth; this is not the case with my Sydney specimens, but Archer tells me that the lip has sometimes small notches along the margin. The Australian specimens have sometimes six flowers, each nearly an inch across.—PLATE CII. *A.* Fig. 1, section of leaf; 2, side, 3, back 4, front views of column; 4, papillæ of anther: —*all magnified.*

§ 2. *Column three-lobed at the apex, the middle lobe notched or entire, the lateral projecting forwards and crenulate.*

4. **Thelymitra carnea** (Br. Prodr. 519); caule gracili subflexuoso 1–3-floro, floribus roseis parvis, columnæ apice trilobæ lobo medio rotundato crenulato lateralibus porrectis carnosulis crenato-dentatis verrucosisque, anthera subacuta.—*Lindl. Gen. et Sp. Orchid.* 519. (*Gunn,* 756, 757.) (TAB. CII. *B.*)

HAB. Near Hobarton, *Gunn;* Georgetown and Cheshunt, *Archer.*—(Fl. Dec.)

DISTRIB. New South Wales, Victoria, and Swan River.

A small, slender species, a span to 18 inches high, with the scape strict, or having a strong double flexure, bearing one narrow-linear leaf at the base, and two closely appressed bracts. *Flowers* two or three, flesh- or rose-coloured, small, $\frac{1}{3}$ inch across. *Segments* of perianth acute. *Column* with a three-lobed apex, the middle lobe truncate or rounded, crenulate, the lateral projecting forwards and upwards, rather thick, toothed and warted. *Anther* short, blunt.—Except by wanting the feathery apices of the lateral lobes of the column, I cannot distinguish dried specimens of this from small ones of *T. ixioides* and *T. nuda.*—PLATE CII. *B.* Fig. 1, section of leaf; 2, side, and 3, front view of column; 4, basis of anther:—*all magnified.*

§ 3. *Column three-lobed at the top, the lateral lobes produced into feathery arms, the middle lobe trifid or notched. Anther wholly hidden in the column.*

5. **Thelymitra nuda** (Br. Prodr. 314); caule strictiusculo 1–10-floro, floribus pallide cæruleis roseisve, columnæ apice 3-lobæ lobo intermedio fornicato rotundato bifido v. emarginato margine integerrimo laterales breviter porrectos plumosos superante, anthera inclusa apice rotundata apiculata.—T. pauciflora, *Br. l. c.* T. arenaria, versicolor *et* graminea, *Lindl. Gen. et Sp. Orchid.* 519–521. (*Gunn,* 58, 935, 942, 101 *in part,* 940, 943, 937.) (TAB. CIII. *A.*)

Var. *β*; columnæ lobo intermedio truncato crenulato.—An species distincta?

HAB. Abundant throughout the Colony, in various soils and localities.—(Fl. Nov.–Jan.) (*v. v.*)

DISTRIB. New South Wales, Victoria, and South Australia; New Zealand?

Stems usually a foot high, and three- to six-flowered, but of all degrees of stoutness and slenderness, and sometimes 2 feet high, at others 6 inches. *Flowers* a pale delicate blue, tinged with pink, or passing into pink. *Column* dark purple towards the apex; the middle and lateral lobes generally yellow; the middle lobe rounded, notched, or bifid, its margins more or less inflexed, quite entire; lateral lobes short, more or less feathery. For the var. *β* I am indebted to Mr. Archer: it may prove a distinct species, but we have very few specimens.—PLATE CIII. *A.* Fig. 1, lateral, and 2, front view of column; 3, anther; 4, hair of column:—*all magnified.*

6. **Thelymitra angustifolia** (Br. Prodr. 314); caule robusto stricto 4–10-floro, floribus pallide cæruleis, columnæ apice trilobæ lobo intermedio fornicato rotundato emarginato v. bifido margine lacero fimbriato laterales breviter porrectos plumosos superante, anthera inclusa obtusa breviter apiculata.—T. aristata, *Lindl. Gen. et Sp. Orchid.* T. grandis, *Müller.* (*Gunn,* 101 *in part,* 941, 939.)

HAB. Sandy soil at Welcome River, Circular Head, etc., not uncommon, *Lawrence, Archer, Gunn.*—(Fl. Nov.)

DISTRIB. New South Wales, Victoria, and South Australia.

I am indebted to Mr. Archer for discriminating my specimens of this species, which were much intermixed with *T. nuda*. It is distinguished by being generally a large, very stout plant, sometimes 3 feet high; it has a large radical leaf, large loose sheathing bracts on the scape, large pale unspotted flowers: the middle lobe of the column is arched, notched or bifid, with deeply crenate or fimbriate margins; it usually overtops the lateral feathery lobes: the anther is blunt, with a short, stout apiculus.—Brown's specimens in the British Museum are very small and slender, though not more so than many of ours, and we rely on the description of the lobes of the column for the identification of our plant with his.

7. **Thelymitra ixioides** (Smith, Exot. Bot. i. t. 29); caule strictiusculo 1–18-floro, floribus pallide cæruleis maculatis, columnæ apice truncatæ lobis lateralibus longe porrectis plumosis intermedio trifido dentato v. fimbriato longioribus, anthera inclusa acuminata.—*Br. Prodr.* 314; *Lindl. Gen. et Sp. Orchid.* 522. T. juncifolia, *Lindl. l. c.* T. iridoides, *Sieb. Pl. Nov. Holl.* 168. T. lilacina, *Müller.* (*Gunn,* 935, 936, 939.) (TAB. CIII. *B.*)

HAB. Abundant throughout the Colony.—(Fl. Nov., Dec.) (*v. v.*)

DISTRIB. New South Wales, Victoria, South Australia, and Swan River.

Similar in general appearance and habit to *T. nuda*, and presenting as great varieties in size, stature, slenderness of stem, and size and number of flowers, but the latter are paler and spotted with black; it is at once distinguished by the truncate top of the column, which does not terminate in a rounded hood which overtops the lateral lobes. The middle lobe of the column is trifid; the three inner segments are of very irregular form and size, but the two lateral are generally the longest, and all are more or less toothed, cut, or fimbriate. The lateral lobes of the column, which have feathery tips, almost invariably point more upwards than in *T. nuda*, and usually considerably overtop the truncate middle lobe. *Anther* with a long point.—PLATE CIII. *B.* Fig. 1, lateral, and 2, front view of column:—*both magnified.*

Gen. II. DIURIS, *Smith.*

Perianthium ringens. *Sepala* inferiora linearia, labello supposita, supremum latius subfornicatum. *Petala* patentia, unguiculata. *Labellum* sessile, trilobum, ecalcaratum. *Columna* brevis, utrinque lobo petaloideo (staminodio) laterali stipata. *Anthera* mutica, stigmati parallela, persistens, bilocularis. *Pollinia* 2, biloba.—Herbæ *glabræ;* caulibus *basi tuberibus duobus oblongis sessilibus terminatis;* foliis *radicalibus linearibus, paucis v. pluribus;* scapo *vaginato, apice* 1–4-*floro;* bracteis *magnis;* floribus *longe pedunculatis, majusculis, plerumque luteis purpureo-maculatis, rarius albis purpureisve, paucis, laxe racemosis.*

The species of this genus are generally handsome, and always variable, especially in the breadth and colour of the segments of the perianth, and their markings. About twenty species are known, all Australian, and chiefly natives of South-eastern Australia; only one is tropical.—*Flowers* yellow in all the Tasmanian species; two lower sepals linear (often green), placed below the three-lobed, spurless, sessile lip; upper sepal broader, arched. *Petals* spreading, horizontally clawed. *Column* short, furnished at the base on each side with two erect, petaloid appendages, which are deformed stamens, and answer to the feathery lateral lobes of the column of *Thelymitra*. (Name from δις, *two*, and ουρος, *a tail;* in allusion to the long, narrow lateral sepals.)

1. **Diuris maculata** (Smith, Exot. Bot. t. 30); foliis 1–2 anguste linearibus lanceolatis filiformibusve scapo 2–5-floro brevioribus, floribus aureis purpureo-variegatis, sepalis inferioribus labello longioribus, petalis longe unguiculatis obovato-orbiculatis rhombeisve, labelli basi bicarinati laciniis subæqualibus

obcuneatis, staminodiis falcatis acutis antice serratis.—*Br. Prodr.* 315. *Bot. Mag.* 3156. D. curvifolia, *Lindl. Gen. et Sp. Orchid.* 507. (*Gunn,* 343.) (Tab. CIV. *B.*)

Hab. Very abundant in pastures and loose forests throughout the Colony.—(Fl. Oct.) (*v. v.*)

Distrib. New South Wales and Victoria.

A most common and extremely variable plant, which I vainly attempted, when in Tasmania, to find constant characters for; it varies in height from 4–12 inches, in the leaves being very narrow, linear-subulate or linear-lanceolate, in the scape being two- to ten-flowered, in the flowers being from ½ to 1 inch across the petals (rarely more), and extremely in the narrowness of the petals and their spots, in the comparative size and shape of the segments of the lip, in the length of the two lower linear sepals, which are generally much longer than the lip, and cross over one another, but are at other times free and straight, and a little in the form and toothing of the lateral lobes of the column. As a species it may be known by the stipitate broad petals, and equally three-lobed lip, which has two prominent ridges at the base.—Plate CIV. *B.* Fig. 1 and 2, front and side view of lip; 3 and 4, front and back view of column:—*all magnified.*

2. **Diuris palustris** (Lindl. Gen. et Sp. Orchid. 507); parvula, foliis 6–8 anguste linearibus scapo 2–3-floro fere æquantibus, floribus aurantiacis purpureo-variegatis, sepalis inferioribus petalis lanceolatis duplo longioribus, labelli basi obscure bicarinati lobis æqualibus intermedio subplicato, staminodiis falcatis acutis antice serratis. (*Gunn,* 933.)

Hab. Marshy ground near Hobarton, Circular Head, etc., *Backhouse, Gunn.* Port Dalrymple, *Patterson.*—(Fl. Dec.)

Distrib. Victoria and South Australia.

A small species, rarely more than 4 inches high, with numerous narrow-linear, almost filiform radical leaves, shorter than the two- or three-flowered scape.—*Peduncles* ¾–1 inch long. *Flowers* small, ¾ inch across; the petals very dark-coloured, of a deep orange, almost obscured by dark purple-red blotches. *Lower sepals* longer than in *D. maculata,* and petals narrower.

3. **Diuris sulphurea** (Br. Prodr. 316); foliis 2–3 anguste linearibus scapo 2–4-floro dimidio brevioribus, floribus aureis purpureo-maculatis, sepalis inferioribus petalis spathulato-lanceolatis longioribus, labelli basi ecarinati lobo intermedio lateralibus duplo triplo majore, staminodiis falcatis latere sublobatis acuminatis.—*Lindl. Gen. et Sp. Orchid.* 509. (*Gunn,* 342, 932.) (Tab. CIV. *A.*)

Hab. Common in many parts of the Colony.—(Fl. Nov.) (*v. v.*)

Distrib. New South Wales, Victoria, and South Australia.

A larger and handsomer plant than *D. maculata,* further easily recognized by the paler, less-blotched flowers, by the labellum not having two elevated ridges at its base, and by the middle lobe being larger, and generally more than twice as large as the lateral. The majority of my specimens are a foot to 18 inches high, and the flowers are 1–1¼ inch across the petals; the upper sepal is trulliform, with a very short claw, and two spots on each side of the middle; the two lower are linear, and vary from as long as to twice as long as the lip: they rarely cross one another; the petals are golden-yellow, with a deep purple-brown claw, and the labellum golden-yellow, blunt, with a prominent mesial line corresponding with a canal on the lower surface, have two large blotches on each side of the middle lobe, one small transverse one across the middle nearer its base, and mottled or clouded lateral lobes; these markings are however variable in size and shape.—Plate CIV. *A.* Fig. 1, dorsal sepal; 2, petal; 3, lateral, and 4. front view of labellum; 5, front, and 6, back view of column:—*all magnified.*

4. **Diuris corymbosa** (Lindl. Swan River Bot. n. 228); foliis 2–3 linearibus ensiformibusque scapo 2–4-floro brevioribus, floribus flavo-purpureis, sepalis lateralibus petalis spathulatis subæquantibus, labelli lobis subæqualibus intermedio obcuneato basi ecarinato, staminodiis falcatis crenatis.—*Lindl. Gen. et Sp. Orchid.* 511. *An* P. aurea, *Br. Prodr.* 316? (*Gunn,* 342, *anno* 1835, 931.) (Tab. CV. *B.*)

HAB. Common in the northern parts of the Colony, as at Circular Head, Emu Bay, Georgetown, etc., *Gunn, Archer.*—(Fl. Sept., Oct.)

DISTRIB. New South Wales, Victoria, and Swan River.

Similar in habitat and general characters to the preceding species, but of a duller colour.—*Flowers* of the same size as those of *D. sulphurea*, or rather larger, sometimes more than 1½ inch across the petals; upper sepal of a dirty yellow, suffused with dull-red, broadly ovate. *Petals* dull yellow, faintly clouded with red. *Labellum* with three nearly equal lobes, or with the middle one rather the largest, and obcuneate, rounded, truncate or emarginate at the tip, without any prominent ridge or keel.—PLATE CV. *B.* Fig. 1, labellum :—*magnified.*

5. **Diuris pedunculata** (Br. Prodr. 316); foliis 3–5 linearibus scapo 1–4-floro brevioribus, floribus pallidis, perianthio connivente, sepalis lateralibus labello appressis porrectis, petalis elliptico-lanceolatis, labelli lobis lateralibus rarius crenatis intermedio trullæformi acuta medio carina duplici pubescente instructo.—D. lanceolata, *Lindl. Gen. et Sp. Orchid.* 508. (*Gunn*, 609, 934.) (TAB. CV. *A.*)

HAB. Abundant in moist places near Hobarton, and other parts of the Island.—(Fl. Oct.) (*v. v.*)

DISTRIB. New South Wales, Victoria, and South Australia.

A very different species from any of the foregoing, but extremely variable. It is at once recognized by the pale-yellow horizontal flowers, whose perianth appears compressed from above, and not spreading, and the labellum has a double downy ridge down the centre: it is one of the earliest spring flowers.—Very variable in height, 4–10 inches. *Leaves* rather numerous, very slender. *Flowers* generally one or two, but sometimes four, on long peduncles, ½–1½ inch long, including the ovary; upper sepal short, narrow, oblong or broadly ovate, pointing forwards, and parallel to the lip; lateral sepals placed close below the lip, linear, straight or curved, as long or longer than the lip. *Petals* pointing forward, narrow or broad, elliptical, about as long as the lip, with short purplish claws. *Lip* with two small crenate lateral lobes, like auricles, at the base of the larger lobe, which is plane, triangular-ovate, acute, points forwards, and is very variable in length.—PLATE CV. *A.* Fig. 1, dorsal sepal; 2, petal; 3, labellum; 4, column :—*all magnified.*

Gen. III. CRYPTOSTYLIS, *Br.*

Sepala patentia, lineari-lanceolata, acuminata. *Petala* consimilia sed minora. *Labellum* magnum, posticum, sessile, indivisum; basi concava, columnam brevissimam occultante. *Stigma* ovatum. *Columnæ* margo membranacea, lacera. *Anthera* stigmati parallela, obtusa, bilocularis. *Pollinia* 4, pulverea.—Herbæ; bulbis *teretibus, fasciculatis, subarticulatis;* folio *radicali petiolato, lineari-lanceolato, coriaceo, reticulato;* floribus *scapum vaginatum terminantibus, spicatis, sordide rufis, majusculis.*

The species of this genus, of which three are described, are all Australian herbs, but are so closely allied to some East Indian and Malayan Island plants (*Zosterostylis*, Bl.), that it is doubtful whether all these should not be brought into the same genus.—*Flowers* rather large, dusky-red or brownish, spiked, solitary or few. *Radical leaves* strongly net-veined when dry. *Roots* fascicled, of thick, jointed or annulate fibres.—The *C. longifolia* is a tall herb, 10–24 inches high, with one rather coriaceous, flat, radical, linear-lanceolate leaf on a long petiole. *Scape* erect, rather stout, with a few distant, short, sheathing bracts. *Flowers* three to eight, rather distant, sessile, upwards of an inch broad. *Ovary* curved, slender, ⅔ inch long, about twice as long as the bracts. *Sepals* narrow-linear, dirty yellow-green, almost an inch long. *Petals* shorter, smaller, more subulate, of the same colour. *Lip* superior (*i. e.* posticous), pointing forward, its face looking downward, broadly-obovate, oblong, blunt, margins recurved, with three medial ridges terminating in a double tubercle towards the apex, dirty reddish-brown. *Column* very short, hidden in the cucullate base of the lip, its margins expanded, membranous, and torn. (Name from κρυπτος, *concealed*, and στυλος, *a column.*)

1. **Cryptostylis longifolia** (Br. Prodr. 317); folio longe petiolato lineari-oblongo v. lanceolato, floribus porrectis, labello obovato-oblongo marginibus recurvis, axi 3-carinato, carinis in processum callosum bilobum desinentibus.—*Lindl. Gen. et Sp. Orchid.* 445; *Bauer, Ill. Gen. Orchid. t.* 17 *et* 18; *Endl. Iconogr. t.* 17; *Plant. Preiss.* ii. 11. Malaxis subulata, *Lab. Nov. Holl. t.* 212. (*Gunn*, 358.) (Tab. CVIII. *A.*)

Hab. Marshy places in sandy soil: Circular Head, *Gunn;* Port Sorrell, Garrett's Sugar-loaf, and east side of Meander River, *Archer.*—(Fl. Feb.)

Distrib. New South Wales and Victoria.

Plate CVIII. *A.* Fig. 1, labellum; 2, side, and 3, front view of column; 4, front view of anther and pollen: —*all magnified.*

Gen. IV. PRASOPHYLLUM, *Br.*

Perianthium ringens. *Sepala* lateralia postica, distincta v. basi cohærentia. *Petala* inæquilateralia, sepalis subæqualia. *Labellum* posticum, unguiculatum, ascendens, indivisum, ecalcaratum, sæpius lamina adnata margine libera auctum. *Columna* basi utrinque laciniis lateralibus (staminodiis) suffulta. *Anthera* mutica, antica, loculis approximatis. *Pollinia* 2, biloba, apicibus stigmatis affixa.—Herbæ *terrestres, glabræ;* tuberibus *indivisis;* folio *radicali, lineari, basi vaginato, tereti-fistuloso, rarius brevissimo;* floribus *parvis, rufescentibus flavidis viridibus fuscisve, dense v. laxe spicatis.*

A large genus of very variable plants, confined, so far as is at present known, to Australia and the New Zealand Islands. The species may readily be recognized by their coated bulbs, which are not pedicelled, solitary fistular leaves, and spike of small flowers, which have the labellum above. Mr. Archer has made a detailed study of the Tasmanian species, and I have gladly availed myself of his arrangement and characters of the species; these appear to me good, though I must own it is not possible to find in all the dried specimens of any species all the characters we agree in considering to be the diagnostics of that species: still the difficulties are not nearly so great in this genus as in *Microtis* and *Thelymitra.* The genus *Genoplesium*, founded by Brown upon a drawing of Bauer's, we have included in *Prasophyllum*, with an amended character, Bauer appearing to us to have confounded the petals with the staminodia, though we must confess that it is difficult to understand how he came to do so; as however the different views of these organs, as represented by Bauer, are not consistent with one another, we are unavoidably compelled to suspect some error.—(Name from πρασον, *a leek*, and φυλλον, *a leaf.*)

CONSPECTUS SPECIERUM.

1. Euprasophyllum.—*Sepala* et *petala* æqualia. *Labellum* breviter unguiculatum. *Columna* sepalo dorsali non adnata. *Staminodia* simplicia v. basi tantum lobulata. *Anthera* mutica. *Folium* plerumque scapo æquilongum.

A. *Labellum* ultra medium repente angustatum; margine non undulato.

1. *Sepala* lateralia sæpius connata. *Flores* virides, odorati. *Folium* elongatum . . *P. alpinum.*

2. *Sepala* lateralia libera. *Flores* sæpius fusci, inodori; sepalis petalisque angustis. *Folium* elongatum . . . . *P. fuscum*, Br.

B. *Labellum* ultra medium sensim angustatum; marginibus undulatis.

a. *Sepala* lateralia plus minusve connata.

* *Ovarium* elongatum, cylindricum, bractea paulo longius.

3. *Staminodia* linearia, membranacea. *Folium* scapum æquans . . . . *P. australe.*

4. *Staminodia* brevia. *Folium* breve . . . . *P. flavum.*

** *Ovarium* turgidum, pedicellatum; *bractea* pedicellum æquante.

5. *Sepala* lateralia basi non saccata. *Folium* breve . . . . *P. brevilabre.*

6. *Sepala* lateralia basi saccata. *Folium* elongatum . . . . *P. lutescens*.

β. *Sepala* lateralia libera.

7. *Sepala* lateralia apicem versus unidentata. *Labelli* lamella adnata, apice abrupte terminata . . . . *P. truncatum*.

8. *Sepala* lateralia apice integra. *Labelli* lamina adnata, bicarinata, apice evanida . *P. patens*.

2. Genoplesium.—*Sepala* lateralia postico longiora. *Labellum* longius unguiculatum. *Columna* sepalo dorsali adnata. *Staminodia* bifida. *Anthera* rostrata. *Aphyllæ*, tuberibus apice vaginatis, scapo superne 1-bracteato.

A. *Labelli* margo integra v. erosa, non fimbriata.

9. *Bractea* a spica remota. *Flores* horizontales. *Sepala* lateralia basi saccata. *Staminodia* subæqualiter bifida . . . . *P. brachystachyum*.

10. *Bractea* basin spicæ attingens. *Flores* horizontales. *Sepala* lateralia basi non saccata. *Staminodia* subæqualiter bifida . . . . *P. nudiscapum*.

11. *Bractea* a spica remota. *Flores* curvi, perianthio deflexo. *Sepala* lateralia basi non aut vix saccata. *Staminodia* subulata, falcato-incurva . . . . *P. despectans*.

B. *Labelli* margo fimbriata.

12. *Flores* horizontales, pauci. *Sepala* lateralia basi non saccata. *Labelli* lamina adnata, simplex. *Staminodia* biloba, lobo inferiore fimbriato . . . . *P. Archeri*.

13. *Flores* numerosi, ascendentes v. suberecti. *Sepala* lateralia basi saccata. *Labelli* lamellæ adnatæ 2, parallelæ. *Staminodia* biloba, lobo inferiore vix fimbriato . *P. nudum*.

A. Euprasophyllum.—*Sepals and petals nearly equal. Labellum with a short claw. Anther sessile, blunt.*

§ 1. *Lateral sepals united throughout their length, or nearly so.*

1. **Prasophyllum australe** (Br. Prodr. 318); folio scapum robustum æquante, spica multiflora elongata, bracteas acutas ovario gracili cylindraceo ⅓ breviores, floribus fuscis, sepalis lateralibus connatis, labelli apice attenuati margine undulato, lamella adnata distincta marginibus membranaceis, staminodiis lineari-elongatis membranaceis antheram superantibus.—*Lindl. Gen. et Sp. Orchid.* 514. *An* P. elatum, *Br.?* (*Gunn*, 921.)

Hab. Abundant at Circular Head and Rocky Cape, in poor soil, *Gunn*.—(Fl. Nov.)

Distrib. New South Wales, Victoria, and Swan River.

A tall, stout, dark reddish-brown or purplish species, 1–2 feet high, with a leaf as long as the scape, a spike of many, crowded, dark-coloured flowers, large for the genus, slender ovaries, lateral sepals cuneate (rarely free), and very long, narrow, white, membranous staminodia. I have seen no authentic specimen of this, but I have of Brown's *P. elatum*, the staminodia of which precisely accord with those of our plant.

2. **Prasophyllum lutescens** (Lindl. Gen. et Sp. Orchid. 514); folio caulem subrobustum æquante, bracteis acuminatis ovariis gracilibus pedicellatis brevioribus, sepalis acuminatis lateralibus cuneatis, petalis acuminatis undulatis, labelli basi saccati medio recurvi apice attenuati marginibus undulatis, lamella adnata distincta, staminodiis lineari-oblongis falcatis recurvis. (Tab. CX. *B*.)

Hab. Wet places: Rocky Cape, *Gunn*; Stoker's Plains, *Archer*; Huon River, *Oldfield*.—(Fl. Nov., Dec.)

Distrib. New South Wales and Victoria.

A rather stout, yellowish-green species, 10–18 inches high, with a leaf as long as the scape.—*Flowers* rather numerous. *Sepals* and *petals* acuminate, somewhat undulated; lateral sepals united. *Lip* undulate, with a saccate base, and large lamella with free margins. *Staminodia* linear-oblong, recurved.—Plate CX. *B*. Fig. 1, flower; 2, labellum; 3, back, and 4, front view of column; 5, pollen:—*all magnified*.

3. **Prasophyllum brevilabre** (Hook. fil.); folio scapo gracili æquilongo, floribus laxe spicatis, ovariis pedicellatis turgidis, bracteis minimis pedicellos subæquantibus, sepalis subacutis lateralibus cuneatis petalisque obtusis, labello elongato basi subsaccato medio refracto, lamella adnata crassiuscula marginibus undulatis, staminodiis lineari-oblongis falcatis recurvis obtusis.—P. lutescens, var. β. brevilabris, *Lindl. l. c.* (*Gunn*, 923.) (Tab. CX. *A.*)

Hab. Rocky Cape, in wet places, *Gunn*; Cheshunt, *Archer*.—(Fl. Dec.)

Distrib. Victoria.

But for the remarkable difference in the ovary and bracts of this species, I should not have ventured to have separated it from *P. lutescens*. In this however the ovaries are shorter, very turgid, distinctly pedicelled, and the minute bracts are hardly longer than the pedicels. The whole plant is also smaller, has fewer and more distant flowers, the sepals and petals are blunter, and the labellum is sharply doubled back on itself at about the middle. Gunn remarks that the labellum is shorter, as well as more acutely reflexed: the latter character I observe to be the case, but I think the shortness is the resulting appearance.—Plate CX. *A.* Fig. 1, flower; 2, labellum; 3, side view of labellum and column; 4, front view of column; 5 pollen:—*all magnified.*

4. **Prasophyllum flavum** (Br. Prodr. 318); caule robusto folioque brevissimo atro-purpureo, spica multiflora, floribus luride viridibus, bracteis acuminatis ovariis cylindraceis brevioribus, sepalis dorsalibus connatis lateralibus petalisque subacutis, labello basi non saccato breviusculo recto v. vix recurvo apice attenuato marginibus undulatis, lamella adnata crassiuscula, staminodiis brevibus obtusiusculis. (Tab. CIX. *A.*)

Hab. In marshy ground: Cheshunt, *Archer*; Huon River, *Oldfield*.—(Fl. Dec.)

Distrib. New South Wales.

I have examined two specimens of this plant, which varies from 10–18 inches high, and is more or less robust, and when dry deep purplish-black. It is very similar to *P. australe*, but may be known from it by the very short leaf, and from others by the slender ovaries, with acute bracts about half their length, the cuneate lateral sepals, short, nearly straight labellum, not saccate at the base, with undulate margins, and short, small staminodia.—Plate CIX. *A.* Fig. 1, side, and 2, front view of flower; 3, labellum; 4, side, and 5, front view of column:—*all magnified.*

§ 2. *Lateral sepals free* (*except in* P. alpinum *and* rostratum). *Labellum not suddenly contracted at the apex.*

5. **Prasophyllum patens** (Br. Prodr. 318); pallide viride, folio caulem elatum æquante v. superante, floribus laxe spicatis majusculis patulis, ovariis turgidis pedicellatis, bracteis parvis obtusis pedicellos vix superantibus, sepalis subacutis lateralibus liberis apice raro dentatis, labelli late ovato-lanceolati reflexi marginibus late undulatis, lamella adnata crassa bilamellata apice evanescente, staminodiis suberectis falcatis apice truncatis integris emarginatisve.—P. truncatum, *Lindl. l. c.* 513. (*Gunn*, 352, 926, 927.) (Tab. CXI.)

Hab. Abundant in moist ground throughout the Island.—(Fl. Nov., Dec.) (*v. v.*)

Distrib. New South Wales and Victoria.

After a laborious examination of very many specimens, I find myself quite unable to distinguish all Gunn's specimens of *P. truncatum* from *P. patens*. Archer however, in his notes and drawings, distinguishes two species by the form of the adnate lamella on the surface of the labellum, that of *P. patens* gradually subsiding into the substance of the labellum, whilst that of *P. truncatum* ends abruptly at the flexure; the sepals of *P. truncatum* are further more uniformly notched near the apex.—The general form of the staminodia, which are broadly oblong and falcate in all the specimens, is very much the same, but the apex varies extremely, being truncate, rounded, or subacute, entire, erose, or notched.—*Root-tubers* bilobed (always?). *Scape* 6–18 inches high, with one leaf as long as

itself, or longer. *Spike* loose, appearing distichous in the dried specimens, many-flowered. *Flowers* often sweet-scented, but not constantly so, pale-whitish or greenish-yellow, pedicelled. *Bracts* very small, blunt, scarcely longer than the pedicels. *Ovaries* turgid. *Sepals* acute, the lateral free, never or seldom notched near the tip. *Petals* linear, blunt, sometimes more or less undulate. *Labellum* recurved, with a distinct, bilobed, rather fleshy lamella, which sinks gradually into the substance of the labellum at its termination; margins very undulate.—PLATE CXI. Fig. 1, side, and 2, front view of flower; 3, side, and 4, front view of labellum; 5, back, 6, side, and 7, front view of column; 8, pollen:—*all magnified.*

6. **Prasophyllum truncatum** (Lindl. Gen. et Sp. Orchid. 513); pallide virescens, folio caulem elongatum æquante v. superante, spica multiflora, floribus majusculis patulis pedicellatis, bractea parva obtusa pedicello æquilonga, sepalis subacutis lateralibus liberis apice sæpius dentatis, petalis planis undulatisve obtusis, labelli late ovato-lanceolati reflexi marginibus late undulatis, lamella adnata definita sulcata apice abrupte truncata, staminodiis suberectis apice rotundatis truncatisve emarginatis. (*Gunn*, 924, 925, 928.) (TAB. CIX. *B.*)

HAB. Common in various parts of the Colony.—(Fl. Nov.)

DISTRIB. New South Wales and Victoria.

I am quite unable to distinguish all states of this, when dry, from *P. patens*, either by the form and notching of the apex of the staminodia, or by any other character, except the form of the lamella on the labellum: this I find from Archer's drawings to be abruptly terminated at the flexure of the labellum with a strong, raised, transverse edge, whilst that of *P. patens* gradually sinks into the nerves of the labellum. In some states the petals are much undulated, and in these the lateral sepals are more frequently notched towards the apex.—PLATE CIX. *B.* Fig. 1, side, and 2, front view of flower; 3, labellum; 4, side, and 5, front view of column:—*all magnified.*

7. **Prasophyllum alpinum** (Br. Prodr. 318); virescens, folio caulem gracilem superante, ovariis turgidis pedicellatis, bracteis pedicellos æquantibus brevibus rotundatis, floribus parvis, sepalis acutis lateralibus liberis approximatis v. basi connatis, labello ovato-lanceolato ultra medium repente angustato pubescente v. glabrato marginibus vix undulatis crassiusculis, lamella adnata vix definita, staminodiis brevibus obtusis hinc emarginatis.—*Lindl. l. c.* 515. (*Gunn*, 929.) (TAB. CXII. *A.*)

HAB. Alpine and subalpine localities: Circular Head, *Gunn;* Mount Wellington, *Oldfield;* Western Mountains, *Archer.*—(Fl. Nov.–Jan.)

DISTRIB. Australian Alps, *Mueller.*

Generally a small, pale green species, with the leaf longer than the scape, but very variable in size, and sometimes 18–20 inches high. *Flowers* loosely spiked, not so patent as in *P. patens*, and smaller. *Ovaries* turgid, pedicelled; *pedicels* with short, blunt bracts. *Lateral sepals* free, or rarely united at the base or to the middle, sometimes notched near the apex. *Lip* short, fleshy, with thick, hardly undulate margins, and a thickened, but not defined disc, often pubescent, ovate at the base, suddenly contracted beyond the middle, not strongly recurved.—It is difficult to define this species from some states of *P. patens* by words, but it is a very distinct plant, and when fresh has a strong smell of Hyacinths.—PLATE CXII. *A.* Fig. 1, side, and 2, front view of flower; 3, back, 4, front, and 5, side views of column:—*all magnified.*

8. **Prasophyllum fuscum** (Br. Prodr. 318); fusco-viride rarius pallidum, folio scapo gracili æquante v. longiore, spica multiflora, floribus pedicellatis, bracteis parvis pedicellos æquantibus, sepalis anguste subulatis lateralibus liberis v. basi connatis, petalis subulatis, labelli vix recurvi infra medium abrupte angustati marginibus non undulatis, lamina adnata non definita bicarinata, staminodiis brevibus.—P. rostratum, *Lindl. Gen. et Sp. Orch.* 516. (*Gunn*, 353.) (TAB. CXII. *B.*)

HAB. Common in various parts of the Island, in a rich and moist soil, *Lawrence, Gunn, Archer.*—(Fl. Nov., Dec.)

DISTRIB. Victoria, *Mueller, etc.*

I find it extremely difficult to distinguish this from *P. alpinum*. Archer defines this as having the lateral sepals free, or united at the base only, whilst in *P. alpinum* they are united along their lower half; but I find that this partial connection of the sepals affords no constant character. The most prominent difference at first sight appears to me to be the darker, often dusky colour of *P. fuscum*, which has much narrower petals and sepals; it is also inodorous.—PLATE CXII. *B.* Fig. 1, side, and 2, front views of flower; 3, side view of column and labellum; 4, front view of column; 5, pollen:—*all magnified.*

B. GENOPLESIUM.—*Anther pedicellate, with a terminal beak. Labellum clawed. Dorsal sepal adherent to back of column. Lateral sepals larger than the dorsal.*—(Genoplesium, *Br.*)

9. **Prasophyllum brachystachyum** (Lindl. Gen. et Sp. Orchid. 513); scapo aphyllo gracili infra apicem 1-bracteato, spica pauciflora, floribus horizontalibus v. deflexis, ovariis turgidis breve pedicellatis, bracteis brevissimis truncatis, sepalis petalisque acutissimis lateralibus longioribus basi connatis subsaccatis, labelli unguiculati lanceolati lamina adnata inconspicua marginibus planiusculis, staminodiis elongatis apice bifidis membranaceis glaberrimis.—Genoplesium Baueri, *Br. Prodr.* 319. (*Gunn*, 930.)

HAB. Sandy soil: Circular Head, and Hampshire Hills, Rocky Cape, *Gunn.*—(Fl. Dec., Jan.)

Tuber as large as a Hazel-nut. Base of the scape covered thickly with withered, sheathing scales. *Scape* very slender, 3–8 inches long, with one appressed, truncate sheath at the base, and one sheathing, acuminate bract, placed towards the top, but removed from the spike. *Spike* of six to ten, horizontally spreading, shortly pedicelled, small, yellowish flowers. *Bracts* very minute, truncate. *Ovary* cylindrical, turgid. *Perianth* horizontal, ¼ inch long. *Lateral sepals* rather saccate at the base, then coherent, lanceolate-acuminate; *dorsal* broadly ovate, very concave, acuminate. *Petals* shorter than the sepals, ovate-lanceolate, with long, acuminate apices. *Lip* as long as the petals, oblong-lanceolate, acuminate, erose at the margin, the adnate lamella blending at the margin into its substance, grooved down the centre. *Staminodia* oblong, deeply bifid, membranous.—This Archer has identified with the *Genoplesium Baueri* of Brown, described from Bauer's drawing. This drawing, which Mr. Brown has kindly allowed us to examine, accurately represents our plant in all but the apparent confounding of the petals with the staminodia in the magnified analyses.

10. **Prasophyllum nudiscapum** (Hook. fil.); scapo aphyllo gracili ad apicem bractea parva instructo, spica brevissima pauciflora, floribus horizontalibus pedicellatis minute bracteolatis, ovariis cylindraceis turgidis, sepalis petalisque acutissimis lateralibus longioribus basi connatis non saccatis, labelli unguiculati lanceolati marginibus planiusculis erosis, lamella adnata inconspicua, staminodiis breviusculis late bidentatis membranaceis glaberrimis.

HAB. Sandy soil: near Hobarton, *J. D. H.*—(Fl. Aug.)

Of this curious little species I have seen only the few specimens gathered by myself, which are passing into fruit, and one from Victoria. It is closely allied and very similar indeed to *P. brachystachyum*, but distinguishable at once by the bract of the scape being placed close under the spike; it has, further, fewer smaller flowers, shorter staminodia, and a narrower labellum, with more erose margins. Younger specimens are however necessary to complete the description of the flower.

11. **Prasophyllum despectans** (Hook. fil.); scapo gracillimo aphyllo apicem versus bractea vaginante instructo, spica elongata, floribus curvis perianthio deflexo atro-purpureo, ovario brevi cylindraceo pedicellato, bracteola minima, sepalis acutissimis lateralibus setaceo-lanceolatis basi connatis non saccatis dorsali late ovato acuminato longioribus, petalis ovato-lanceolatis acutissimis, labello unguiculato lanceolato acuminato marginibus integris, lamina adnata definita simplici, staminodiis subulatis falcatis incurvis glaberrimis. (TAB. CXIII. *A.*)

HAB. Sandy soil: near Hobarton, *J. D. H.;* Cheshunt?, *Archer*.—(Fl. Sept.)

Root and *scape* as in the other species of this section. *Bract* placed below and rather distant from the spike. *Spike* ½–1 inch long, eight- to twelve-flowered. *Flowers* minute, short, curved, the perianth pointing downwards. *Sepals* and *petals* acuminate, with subulate points. *Staminodia* with incurved, subulate points, which, with the deflexed flowers, distinguish this species well from all its allies.—PLATE CXIII. *A*. Fig. 1, flower; 2, side view of column and labellum; 3, labellum; 4, front view of column:—*all magnified*.

12. **Prasophyllum Archeri** (Hook. fil.); scapo gracillimo apicem versus bractea longe acuminata instructo, spica brevi pauciflora, floribus horizontalibus flavo-rubris, sepalis lateralibus basi connatis dorsali late ovato acuminato longioribus, petalis ovato-lanceolatis acuminatis, labello unguiculato marginibus fimbriato-laceris, lamella adnata simplici crassa definita, staminodiis bilobis lobo anteriore subulato fimbriato carnosulo posteriore breviore truncato membranaceo, anthera rostro elongato. (TAB. CXIII. *B*.)

HAB. Light soil near Cheshunt, *Archer*.

A very distinct species, of the same habit and general appearance as *P. brachystachyum*, but more slender, with smaller reddish-yellow flowers, fimbriated membranous margins to the lip, which bears a very prominent, thick, cellular, undivided, adnate lamella, grooved down the middle, and very different staminodia: these are broad, and unequally two-lobed, the outer or lower lobe is red, subulate-lanceolate, curved, cellular and papillose, with fimbriated edges; the inner or upper is shorter, broader, truncate, transparent, white, and naked.—*Anther* with a long rostrum.—PLATE CXIII. *B*. Fig. 1, front, and 2, side views of flower; 3, column and labellum; 4, front of column; 5, front, and 6, side views of pollen:—*all magnified*.

13. **Prasophyllum nudum** (Nob. in Fl. N. Zeal. i. 242); scapo aphyllo gracili apicem versus 1-bracteato, spica multiflora, floribus suberectis breve pedicellatis minute bracteolatis atro-purpureis, sepalis lateralibus basi connatis subsaccatis dorsali ovato-acuminato longioribus, petalis ovato-lanceolatis acuminatis, labello oblongo-lanceolato unguiculato, lamina basi biauriculata marginibus fimbriatis, lamellis adnatis 2 parallelis discretis, staminodiis bilobis lobo anteriore subulato subfimbriato posteriore obtuso latiore, anthera longiuscule rostrata. (TAB. CXIII. *C*.)

HAB. Collected by Gunn, but I do not know where.

DISTRIB. New Zealand.

Very variable in size, 3–10 inches high, always slender, with a leafless, one-bracteate scape, and rather long spikes of eleven to thirty ascending, minute flowers, smaller than in any of the preceding of this section. It is very nearly allied to *P. Archeri*, but differs in the two distinct, parallel lamellæ on the labellum, and the shorter, less fimbriated, anticous lobe of the staminodia.—PLATE CXIII. *C*. Fig. 1, side, and 2, front views of flower; 3, labellum:—*all magnified*.

Gen. III. CALOCHILUS, *Br.*

Perianthium ringens. *Sepala* patentia, libera, æqualia; lateralia labello supposita. *Petala* minora, erecta. *Labellum* anticum, sessile, simplex, liberum, acuminatum, disco marginibusque barbatum. *Columna* teres, carnosa, cucullata, rostello acuto. *Anthera* stigmate parallela, persistens, columnæ inclusa, mucronata. *Pollinia* 2, sulcata.—Herbæ *glabræ*, bulbis *indivisis nudis;* foliis *paucis radicalibus canaliculatis, caulinis semi-vaginantibus;* floribus *paucis, raris, spicatis racemosisve, majusculis, rufis albisve*.

The few known plants of this genus are very beautiful, and all Australian; they are easily recognized by the red-brown (rarely yellowish or white) flowers, with an ovate-lanceolate labellum, covered with a copious, pendulous beard of delicate filaments.—*Root* an undivided bulb, above which are very thick, spreading, cylindrical rootlets; *stem* 12–18 inches high, with one or a very few narrow radical leaves, and some sheathing ones on the scape. *Flowers* few, large, racemose or spicate, with three nearly equal, lanceolate sepals, of which two are placed under

the labellum, two inner petals similar to the sepals, and a long, pendulous, crinite lip. *Column* short, hooded, enclosing an erect, acute anther.—The *C. campestris* has a four- to eight-flowered spike; the flowers about half an inch across; labellum longer than the sepals, terminating in a ligulate point of very variable length. I find such great differences in the length of the labellum and its ligulate apex, in the relative length of the bracts and ovaries, and in the size and colour of the flowers of the different forms of *Calochilus*, that I much doubt there being more than one species of the genus. (Name from καλος, *beautiful*, and χειλος, *a lip*.)

1. **Calochilus campestris** (Br. Prodr. 320); caule 3-8-floro, sepalis lateralibus petalisque oblique ovatis acuminatis, labello sepalis subduplo longiore apice appendice ligulata brevi basi biglandulosa.—*Bot. Mag. t.* 3187. C. campestris *et* C. herbaceus, *Lindl. Gen. et Sp. Orchid.* 459. (*Gunn*, 919, 920.) (Tab. CVI. *A.*)

Hab. Not uncommon in moist ground, as also in poor, sandy soil: Rocky Cape and Woolnorth, *Gunn*; Port Sorrell, *Archer*; Huon River, *Oldfield*.—(Fl. Dec.)

Distrib. Tropical Australia, *Brown*; New South Wales, Victoria, and South Australia.

Plate CVI. *A.* Fig. 1, labellum; 2, side, and 3, front view of column; 4, pollen:—*all magnified.*

Gen. IV. SPIRANTHES, *Rich.*

Sepala lateralia labello supposita, basi brevissime saccata; supremum cum petalis in galeam connivens. *Labellum* anticum, breviter unguiculatum, imberbe, columnam brevem amplectens. *Anthera* dorsalis, stigmate parallela, rostello lamellato apice bifido incumbens. *Pollinia* 2, glandulæ communi affixa.—Herbæ *foliosæ, radice e fibris crassis indivisis;* foliis *angustis;* scapo *vaginato;* floribus *in spicam sæpe tortam dispositis.*

A large and widely-diffused genus, the only Tasmanian, or indeed Australian, species of which is found in many parts of the globe, a very rare instance of wide distribution in the Order. The New Zealand species, which I distinguished in the Flora of that country as *S. Novæ-Zelandiæ*, appears, according to Dr. Lindley, to be a variety of the Australian, differing in the narrower labellum, but not constantly.—The *S. Australis* is a small, herbaceous plant, 4 inches to a span high, with a root of thick, unbranched fibres, several linear, radical leaves, and a vaginate scape, terminated by a twisted spike of small, reddish, crowded flowers. *Scape* and *spike* glandular. *Bracts* broadly ovate-acuminate, as long as the ovary. *Flowers* $\frac{1}{3}$ inch long, horizontal. *Sepals* and *petals* ovate-lanceolate, subacute; dorsal sepal and petals forming together a galea; lateral sepals rather saccate at the base. *Lip* hardly longer than the sepals, white, shortly clawed, linear-oblong or obovate-oblong, with crumpled and crenate margins. *Column* short. *Anther* dorsal. (Name from σπειρα, *a spire*, and ανθος, *a flower*.)

1. **Spiranthes Australis** (Lindl. in Bot. Reg. 823); foliis anguste lineari-lanceolatis, spica glanduloso-pubescente tortili, labello oblongo obtuso marginibus crispatis basi biligulato, columnæ lobulis lateralibus stigmate longioribus.—S. Novæ-Zelandiæ, *Nob. in Fl. N. Zeal.* i. 243. Neottia Australis, *Br. Prodr.* 319. (*Gunn*, 402, 754.)

Hab. Moist places: Circular Head, *Gunn*; Cheshunt, *Archer*.—(Fl. Nov.)

Distrib. New South Wales and Victoria, New Zealand, China, India, and Siberia.

Tribe II. Arethuseæ.

Gen. V. CORYSANTHES, *Br.*

Perianthium ringens. *Sepalum* supremum maximum, galeatum; lateralia basi connata, una cum petalis angustissimis labello occultata. *Labellum* magnum, cucullatum v. tubulosum. *Columna* brevis, solida.

Anthera 1-locularis, semibivalvis, persistens. *Pollinia* 4.—Herbæ *perpusillæ, glabræ;* folio *unico rotundato, integro v. lobato;* flore *solitario, maximo, subsessili, luride rufo v. purpureo.*

A very singular genus, consisting of about six Australian and one Javan plant; all are small herbs, growing in very shaded, damp woods, and have slender roots, with one or two small, pedicelled tubers, very short stems, a rounded, very membranous leaf, and large, solitary, dingy rufous-coloured, sessile flower, quite unlike that of any other Orchideous plant; that of the Tasmanian species resembles a snail.—*Sepals* unequal, the upper large and hooded, the lateral very small and narrow, and, as well as the small petals, hidden under the large upper sepal. *Lip* large, tubular or saccate, sometimes spurred; that of the Tasmanian species is spurless, hooded, with toothed or fimbriated margins. (Name from *κορυς, a helmet,* and *ανθος, a flower.*)

1. **Corysanthes fimbriata** (Br. Prodr. 328, et in App. Flinders' Voy. cum ic.); folio rotundato-cordato v. oblongo, flore sessili, labello ecalcarato supra dilatato disco glanduloso marginibus dentatis fimbriatisve, sepalo dorsali unguiculato incurvo.—C. fimbriata *et* C. Diemenica, *Lindl. Gen. et Sp. Orchid.* 393. (*Gunn,* 614.) (Tab. CVII. *B.*)

Hab. Common upon shaded, mossy banks, and in moist, sandy places, in various parts of the Island. —(Fl. July–Sept.) (*v. v.*)

Distrib. New South Wales and Victoria.

Lindley distinguished this doubtfully as a different species from *C. fimbriata,* from its having larger flowers and less fimbriated margins to the labellum; but I find both the flowers and leaves to be extremely variable in absolute and relative size. The flowers are sometimes nearly white, and vary from $\frac{1}{3}$–$\frac{2}{3}$ inch long.—Plate CVII. *B.* Fig. 1, dorsal sepal; 2, column and petals; 3, front view of column; 4, portion of labellum; 5, front, 6, back, and 7, side views of pollen:—*all magnified.*

Gen. VI. LYPERANTHUS, *Br.*

Perianthium carnosulum, papillosum, ringens, extus eglandulosum. *Sepalum* posticum fornicatum; lateralia et petala angusta, planiuscula, subæqualia. *Labellum* breve, semicucullatum, ascendens, recurvum, disco glanduloso v. costato. *Columna* linearis, solida. *Anthera* bilocularis, terminalis. *Pollinia* 4.—Herbæ *terrestres, glabræ, radicibus crasse fibrosis tuberem solitarium gerentibus;* caule *basi foliato, superne vaginato;* floribus *racemosis, fuscis v. luride atro-purpureis.*

There are about six known species of this genus, of which four are Australian, and of the others, one inhabits New Caledonia, and the other Lord Auckland's Group, south of New Zealand. *L. nigricans,* the only Tasmanian species, is rather common in Australia, extending from Sydney to Swan River, but is very rare in Tasmania; it is a stout, herbaceous plant, 4–7 inches high, with dark, red-purple flowers. *Root* of very stout, often woolly fibres, springing from the base of the stem, of which one, stouter and longer than the rest, terminates in an oval, undivided tuber. *Leaves* very thick and fleshy, the lowest largest, ovate or circular, the upper gradually passing into sheathing bracts, which loosely clothe the scapes. *Flowers* three to five, racemose, about 1 inch long, almost concealed in the large, elliptical, concave bracts. *Upper sepals* galeate, lanceolate, acute; *lateral sepals* about equal in length, linear, curving downwards. *Petals* ascending. *Lip* blunt, with a revolute apex, glandular disc, and crisped margins. (Name from *λυπηρος, mournful,* and *ανθος, a flower;* in allusion to the aspect of the flowers.)

1. **Lyperanthus nigricans** (Br. Prodr. 325); folio radicali cordato-rotundato v. ovato-oblongo, caulis vaginis bracteisque cymbiformibus, labelli apice revoluto disco papilloso marginibus undulato-crispatis.—*Lindl. Gen. et Sp. Orchid.* 392; *Endl. Icon. t.* 7; *Plant. Preiss.* ii. 5. (Tab. CVI. *B.*)

Hab. Forest near Georgetown, *Archer.*—(Fl. Dec.)

Distrib. New South Wales, Victoria, and Swan River.

Plate CVI. *B.* Fig. 1, flower, *magnified.*

Gen. VII. BURNETTIA, *Lindl.*

Perianthium suberectum. *Sepalum* supremum ovato-lanceolatum, subgaleatum; lateralia lineari-oblonga, marginibus involutis. *Petala* linearia, sepalis æquilonga, marginibus involutis. *Labellum* parvum, sessile, ascendens, cuneatum, marginibus involutis, disco glanduloso basi callo instructo. *Columna* membranacea, marginibus basi utrinque productis. *Anthera* persistens, terminalis, 2-locularis, apiculata. *Stigma* ovatum. —Herba *pusilla, erecta, robusta,* 2–3-*foliata;* foliis *vaginæformibus;* floribus 2–3, *pro planta magnis, erectis.*

A very singular and rare plant, the only one of its genus hitherto discovered. Lindley, who first described it, has placed it in *Neottieæ*, but the relative positions of the anther and stigma on the column appear to me the same as in *Lyperanthus* and its allies, with which it further agrees in the structure of the lip and its appendages.—A very small, herbaceous, greenish plant, about 3–4 inches high, with two to three distant, leafy bracts on the stem, and two to three large, erect flowers, nearly ½ inch long. *Ovary* clavate, longer than the acuminate flower-bracts, as long as the perianth. *Sepals* nearly equal, oblong-lanceolate, subacute; dorsal concave; lateral with involute margins. *Petals* as long as, but narrower than, the sepals, with involute margins. *Labellum* short, ascending, broadly cuneate, with a truncate, erose apex, its margins rolled in; *disc* with two thickened ridges, terminating in a conical callus near the base, and in some scattered, small, clavate glands towards the apex; a few papillæ are also scattered over the surface of the labellum, whose under surface is granular towards the apex. *Column* with broad, membranous margins. *Anther* terminal, two-celled, acuminate. *Stigma* a rather prominent, hollow, ovate, depressed body, below and in front of the very base of the anther. (Named in honour of the late *G. T. Burnett*, a Professor of Botany in London.)

1. **Burnettia cuneata** (Lindl. Gen. et Sp. Orchid. 517). (*Gunn*, 947.) (TAB. CVII. *C.*)

HAB. Very rare. Sandy soil: at the foot of Rocky Cape, *Gunn;* Port Arthur, *Backhouse* (*fide Gunn*). —(Fl. Dec.)

PLATE CVII. *C.* Fig. 1, flower; 2, labellum; 3, column and labellum; 4, front view of column:—*all magnified.*

Gen. VIII. CALEANA, *Br.*

Perianthium subbilabiatum. *Sepala* et *petala* subæqualia, linearia. *Labellum* posticum, unguiculatum, limbo peltato cavo, foramine exteriore. *Columna* maxima, petaloidea, concava. *Anthera* terminalis, persistens, loculis approximatis. *Pollinia* 4.—Herbæ *graciles, glabræ,* 1- v. *paucifloræ;* radicibus *fibrosis, tuberiferis;* folio *radicali solitario, basi vaginato;* floribus *fusco-viridibus, labello columnaque rufis;* labello *mobili, reflexo, instante pluvio v. irritatione inflexo, columnæ incumbente.*

The species of this genus, of which only three are known, are remarkable for the irritability of the lip; this is posticous, has a long, narrow pedicel, and stands erect, as it were, over the flower, but when the plant is shaken, or rain comes on, it suddenly shuts down, like a lid, on the flower, and its lamina becomes closely applied to the large petaloid column. A Swan River species is said thus to catch insects, whose struggles appear to disengage the pollen from the anther, and apply it to the stigma.—Slender, herbaceous plants, with a solitary, narrow, radical leaf, and tall scape, bearing one or very few, rather large, deep red-brown flowers. The Tasmanian *C. major* is a span to 8 inches tall, with a leaf varying from narrow-linear to broadly lanceolate, a scape with one small, sheathing bract, and about two flowers, ⅔–1¼ inch long. *Flowers* pedicelled, with a small bract at the base of the pedicel, reversed, the labellum being above. *Sepals* three, narrow-linear, one hanging down behind the column, and the two lateral pointing backwards, nearly horizontally, notched at the margin. *Petals* about as long as the column, linear, placed against its sides, pointing downwards and forwards. *Labellum* with a long, slender peduncle, the lamina produced into a narrow point at the apex, and at the base into a subulate appendage. *Column* much larger

than any other part of the flower, broadly dilated, petaloid, dark red-brown, with a terminal, greenish anther. (Named in honour of *G. Caley*, a diligent explorer of New South Wales botany.)

1. **Caleana major** (Br. Prodr. 329); folio angusto lineari v. lanceolato plano, scapo medio 1-bracteato, limbo labelli lævi semiovato apice angustato basi appendice curva instructo.—*Endl. Nov. Gen. t.* 1598; *Lindl. Gen. et Sp. Orchid.* 429. (*Gunn*, 946.) (TAB. CVII. *A.*)

HAB. Sandy soil: Rocky Cape, *Gunn;* Cheshunt, *Archer;* Hobart and Huon River, *Oldfield.*—(Fl. Dec.)

DISTRIB. New South Wales and Victoria.

PLATE CVII. *A.* Fig. 1, flower; 2, lateral, and 3, dorsal sepal:—*all magnified.*

Gen. IX. PTEROSTYLIS, *Br.*

Perianthium ringens. *Sepalum* posticum cum petalis in galeam connatis v. conniventibus; lateralia connata, deflexa v. erecta. *Labellum* unguiculatum, inclusum v. exclusum et dependens, limbo angusto basi appendiculato, ungue sepalis adnato. *Columna* elongata, arcuata, semiteres, apice auriculis petaloideis alata. *Anthera* terminalis, persistens, loculis approximatis. *Pollinia* 4, compressa.—Herbæ *pleræque membranaceæ, foliosæ v. aphyllæ;* radicibus *e caudicibus elongatis, apice tuberiferis;* caulibus *v.* scapis 1- *pauci- v. plurifloris;* floribus *parvis v. magnis, pallide viridibus, labello sæpe irritabili.*

A large and very peculiar and well-marked genus, common in extratropical Australia and New Zealand, but not hitherto detected elsewhere. About 35 species are known to me, of which 28 are Australian, and half of the latter are Tasmanian; they present very different forms, but all agree in being pale green herbaceous plants, with underground tubers terminating long caulicles.—*Leaves* generally rosulate and radical, more rarely linear and alternate on the stem, rarely none, or reduced to sheathing scales; in some species the leaves appear only after the flowers; in others again they are borne on separate stems, springing from the base of the flowering scape. *Flowers* solitary, or numerous and spiked, large or small. *Upper sepal* and *petals* together forming a very convex upper lip or galea; *lower sepals* connate, ascending and closing the flower, or hanging downwards. *Labellum* often irritable, usually small, linear, clawed, the limb narrow, with an appendage at the base, in some species fringed with long hairs. *Column* slender, winged near the apex. (Name from πτερον, *a wing*, and στυλος, *a column.*)

§ 1. *Radical leaves spreading. Scape one-flowered, with one or more sheathing bracts, or leafy. Lower lip of perianth ascending. Labellum glabrous.*

1. **Pterostylis curta** (Br. Prodr. 327); foliis radicalibus stellatis oblongo-ovatis obtusis breve petiolatis, scapo gracili 1–3-bracteato, flore solitario erecto magno, labio inferiore galea obtusiuscula breviore, labelli inclusi lamina integra obtusa, appendice bifida penicillata.—*Guill. Ic. Lith. t.* 2; *Hook. Bot. Mag. t.* 3086; *Lindl. Gen. et Sp. Orchid.* 390. (*Gunn*, 600.)

HAB. Common in shady places.—(Fl. Oct.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

A graceful species.—*Leaves* all radical, spreading, membranous, 1–2 inches long. *Scape* with one to three membranous, erect, distant, sheathing bracts. *Flowers* erect, about 1 inch long. *Lower lip* shorter than the galea. *Wings of the column* produced above into short, subulate points, and below into long, straight auricles.

2. **Pterostylis nutans** (Br. Prodr. 327); foliis radicalibus stellatis petiolatis ovatis oblongisve subacutis, scapo gracili 1–2-bracteato, flore solitario horizontali v. nutante, labio inferiore galeam apice decurvam æquante, labelli inclusi limbo piloso v. glabro apice attenuato truncato, appendice bifida penicillata.—*Bot. Mag. t.* 3085; *Lindl. l. c.* 391. (*Gunn*, 604.)

Hab. Common in shaded places, in a poor soil.—(Fl. Sept.–Nov.) (*v. v.*)

Distrib. New South Wales.

Similar in general characters to *P. curta*, but readily distinguished by the horizontal or nodding flowers, by the lips of the perianth being equal in length, and by the apex of the galea being suddenly turned downwards. —*Wings of column* produced upwards into slender, filiform appendages, broadly auricled below, and dilated.

3. **Pterostylis pedunculata** (Br. Prodr. 327); foliis radicalibus substellatis ovato-oblongis lanceolatisve subacutis obtusisve, scapo laxe 1–2-bracteato, flore erecto, labii inferioris laciniis capillaribus galeam apice repente incurvam superantibus, dente intermedio incurvo interjecto, labello incluso columna breviore, lamina subacuta, appendice bifida penicillata.—*Lindl. l. c.* 391. (*Gunn*, 629.) (Tab. CXIV. *A.*)

Hab. Abundant in shady places.—(Fl. Sept.–Nov.) (*v. v.*)

A smaller species than either of the preceding.—*Leaves* 1–2 inches long, sessile or petioled, erect or spreading. *Scape* slender. *Flowers* erect, ⅔ inch long. *Lower lip* with two long, slender, filiform arms, much longer than the suddenly inflexed galea. *Wings of the column* produced upwards into slender, filiform appendages, and downwards into falcate auricles.—Plate CXIV. *A.* Fig. 1, labellum; 2, side, and 3, front view of column:—*all magnified.*

4. **Pterostylis nana** (Br. Prodr. 327); foliis radicalibus stellatis longe petiolatis ovatis obtusis acuminatisve, scapo puberulo 2-bracteato, bracteis distantibus subfoliaceis, flore erecto, labii inferioris laciniis filiformibus galeam acuminatam subæquantibus, labelli lanceolati appendice bifida subpenicillata.—*Lindl. l. c.* 391. (*Gunn*, 902.) (Tab. CXIV. *B.*)

Hab. Dry soil; not uncommon in several parts of the Colony: Woolnorth, Circular Head, *Gunn;* Bagdad, *Miss Forster.*—(Fl. Oct.) (*v. v.*)

Distrib. Victoria, *Robertson.*

Very similar to *P. pedunculata*, but much smaller, with petiolate, ovate, acute, or even acuminate leaves; smaller, less foliaceous, lanceolate bracts; a pubescent scape, and smaller flower.—*Leaves* rather numerous, ½–1 inch long, including the long petiole. *Flower* erect, ⅔–1 inch long. *Wings of column* produced upwards and downwards into subulate points.—Plate CXIV. *B.* Fig. 1, labellum; 2, side, and 3, front view of column:—*all magnified.*

5. **Pterostylis obtusa** (Br. Prodr. 327); foliis radicalibus (in planta florida nullis) stellatis breve petiolatis ovato-oblongis obtusis, scapo 2–3-bracteato, bracteis subfoliaceis, flore majusculo erecto, labii inferioris laciniis longe filiformibus, galeæ arcuato-incurvæ sepalo dorsali longe acuminato caudato petalos acuminatos superante, labelli lamina lanceolata, appendice bifida appendiculata.—*Lindl. l. c.* 389. (*Gunn*, 357.) (Tab. CXV. *C.*)

Hab. Poor soil; common in the northern parts of the Colony: Circular Head, *Gunn;* Port Sorrell, Cheshunt, and the Mersey, *Archer.*—(Fl. Nov., Dec.)

A handsome, rather large species, a span to 7 inches high.—*Root* of two collateral tubers, of which one bears four or five petioled, ovate-oblong leaves, and the other, a bi- or tri-bracteate, slender scape. *Bracts* ⅔ inch long, loose, rather foliaceous, with long, acuminate points. *Flower* erect, 1½ inch long. *Galea* arched, curving downward from above the middle; dorsal sepal, with a very long, caudate apex, longer than the petals. *Lower lip* with very slender, erect, filiform laciniæ. *Labellum* very narrow, its apex exserted, irritable, as in most of the species. *Wing of column* produced into a short, subulate point above, and long oblong auricle below.—Plate CXV. *C.* Fig. 1, column and labellum; 2, labellum; 3, front view of column:—*all magnified.*

6. **Pterostylis cucullata** (Br. Prodr. 327); foliis radicalibus amplis stellatis oblongis oblongolanceolatisve acutis, bracteis 1–2 magnis foliaceis late vaginantibus cymbiformibus cucullatis membranaceis, flore magno erecto, labii inferioris laciniis subulatis galeam lente curvam æquantibus, labello integro obtu-

siusculo, appendice bifida penicillata.—P. cucullata *et* P. scabrida, *Lindl. l. c.* 389, 390. (*Gunn*, 355, 601, 904, 905, 906.) (TAB. CXV. *A.*)

HAB. Common in poor soil and shaded places.—(Fl. Oct., Nov.)

A large, erect-flowered species, extremely variable in stature, from 3–8 inches high.—*Leaves* usually sessile, $1\frac{1}{2}$–$2\frac{1}{2}$ inches long, elliptic-oblong or lanceolate and acute. *Bracts* 1 inch long, very large, membranous and spathe-like. *Flowers* sometimes pubescent, $1\frac{1}{2}$ inch long, including the ovary. *Galea* arching over at the top only, blunt. *Lower lip* with two short, acuminate lobes, as long as the galea. *Wing of the column* produced upwards into a short, subulate point, and downwards in a long, straight, subacute, narrow auricle.—PLATE CXV. *A.* Fig. 1, side view of column and labellum; 2, front view of labellum; 3, ditto of column:—*all magnified.*

7. **Pterostylis dubia** (Br. Prodr. 328); caule bifolio, foliis sessilibus oblongo-ovatis obtusis, scapo ebracteato, flore erecto magno, galea apice lente curva subacuta, labio inferiore breviter bifido galea breviore, segmentis breviter subulatis, labello angusto lineari-lanceolato columnæ æquilongo, appendice apice penicillata. (TAB. CXV. *B.*)

HAB. Cuming's Head, in shaded places, *Mr. C. Hortle* (*Archer*).—(Fl. Jan.)

Very similar to *P. cucullata* in many respects, but with only two leaves, no bracts on the very short scape, and very short lobes to the lower lip of the flower:—PLATE CXV. *B.* Fig. 1, flower; 2, petal; 3, lateral view of column and labellum; 4, front view of column:—*all but fig.* 1 *magnified.*

8. **Pterostylis furcata** (Lindl. Gen. et Sp. Orchid. 390); foliis radicalibus stellatis petiolatis lanceolatis ellipticisve acutis (interdum dissitis), bracteis 2–3 foliaceis laxe vaginantibus, flore erecto, perianthio glaberrimo, labii inferioris laciniis anguste caudatis galeam vix incurvam acuminatam superantibus, labello lineari, appendice bifida penicillata. (*Gunn*, 602.)

HAB. Shaded, wet places: near Launceston and Deloraine, *Gunn;* Chudleigh and Cheshunt, *Archer.* —(Fl. Oct.)

Closely allied to *P. pedunculata*, but easily distinguished by the narrower, more shortly petioled leaves, the shorter laciniæ of the lower lip, and the scarcely incurved galea. The smaller bracts and laciniæ of the lower lip being produced beyond the galea, distinguish it from *P. cucullata.*—*Wing of the column* produced upwards into a very short, blunt point, and downwards into a blunt, long auricle.

§ 2. *Radical leaves spreading. Scape one- or many-flowered. Lower lip of perianth deflexed. Labellum fringed with long hairs.*

9. **Pterostylis squamata** (Br. Prodr. 327); foliis radicalibus stellatis imbricatis suberectis lanceolatis acuminatis, caulinis lanceolatis, flore erecto, galea oblongo-lanceolata apice oblique truncata acuminata, labio inferiore deflexo bipartito laciniis linearibus, labelli lamina subulata pilis flavis crinita apice glandula incrassata clavata glabra, appendice apice penicillata.—*Flor. N. Zeal.* i. 249. P. squamata *et* P. barbata, *Lindl. l. c.* 388. (*Gunn*, 603.) (TAB. CXVI. *A.*)

HAB. Common in sandy soil: near Hobarton, Circular Head, Georgetown, etc., *Gunn, Archer.*—(Fl. Nov.)

DISTRIB. Victoria, Swan River, New Zealand.

A very remarkable species, 5–8 inches high, conspicuous from the beautiful labellum being fringed with yellow hairs, and terminated by a purple, polished, capitate gland. Archer remarks that the labellum is irritable, as in most of the genus.—*Wing of the column* produced upwards into a long, erect, subulate point, and downwards to a long, falcate auricle.—PLATE CXVI. *A.* Fig. 1, flower; 2, side view of labellum and column; 3, front view of labellum; 4, hairs of the same; 5, front view of column:—*all but fig.* 1 *magnified.*

10. **Pterostylis mutica** (Br. Prodr. 328); foliis radicalibus confertis stellatis breve petiolatis ovatis, scapo bracteato multifloro, spica subspirali, floribus suberectis, perianthio inclinato v. horizontali, galea brevi lata obtusa, labio inferiore deflexo ovato obtuso indiviso v. breviter bifido, labello oblongo obtuso, appendice elongata apice lobata v. obtusa.—*Lindl. l. c.* 390. (*Gunn*, 605, 900, 901.) (Tab. CXVII. *B.*)

Hab. Common in rich pastures, as well as in light sandy soil.—(Fl. Oct., Nov.) (*v. v.*)

Distrib. New South Wales and Victoria.

A very variable and abundant species, from 3 to 10 inches high, robust or slender, few- or many-flowered, the flowers small, densely or loosely spiked, the spike straight or somewhat twisted.—*Leaves* all radical, numerous. *Scape* bracteate. *Flowers* suberect, $\frac{1}{3}$–$\frac{1}{2}$ inch long. *Perianth* inclined or horizontal. *Galea* short, broad, blunt, nearly straight, or incurved at the apex. *Lower lip* bent down, ovate, entire and blunt, or bifid at the apex. *Labellum* short, broad, with a long, stout, incurved appendix, that is simple or thickened at the apex, and there entire or lobed. *Wing of column* slightly ciliated at the lower margin, scarcely auricled.—Plate CXVII. *A.* Fig. 1, side, and 2, front view of lower lip and labellum; 3, side, and 4, front view of column:—*all magnified.*

11. **Pterostylis rufa** (Br. Prodr. 327); foliis radicalibus stellatis petiolatis ovato-oblongis acutis, scapo bracteato 3–5-floro, perianthio horizontali, galea lata abrupte longe acuminata, labio inferiore deflexo bifido lobis ovatis subulatis, labello obovato emarginato longe laxe piloso, appendice brevissima obtusa ciliata.—*Lindl. l. c.* 390. (Tab. CXVI. *B.*)

Var. *α*; foliis coætaneis, scapo laxe bracteato, floribus remotis majoribus pedicellatis.

Var. *β*; scapo florifero aphyllo, bracteis numerosis, spica densiore, floribus minoribus subsessilibus.

Hab. Port Sorrell, on dry sandy ridges near the beach, *Archer.*—(Fl. Nov.)

Distrib. New South Wales.

I have described two forms of this plant, both from Mr. Archer; of one, which agrees with authentic specimens of Brown's *P. rufa*, I have seen only a drawing: it has larger and longer-pedicelled flowers; of the other I have examined three specimens from Mr. Archer: it has no leaves, more bracts on the scape, smaller and more sessile flowers. The species is intermediate in size and habit between *P. mutica* and *P. squamata*, having the numerous flowers of *mutica* and the bearded labellum of *squamata*: it is however extremely different from both.—*Scapes* 4–8 inches high, leafless, or with ovate, oblong, stellate leaves at the base. *Flowers* reddish-yellow-green, $\frac{2}{3}$ inch long. *Perianth* inclined or horizontal. *Galea* broad, abruptly acuminated, with a long point. *Lower lip* sharply bifid. *Labellum* coriaceous, small, broadly oblong, blunt, bearded with long hairs; appendix blunt, ciliated. *Wings of column* ciliated, hardly auricled.—Plate CXVI. *B.* Fig. 1, front, and 2, side view of labellum; 3, column:—*all magnified.*

§ 3. *Radical leaves none; cauline none, or alternate, lanceolate. Scape one-flowered. Lower lip of perianth ascending. Labellum glabrous.*

12. **Pterostylis præcox** (Lindl. Gen. et Sp. Orch. 388); caule gracili folioso, foliis alternis lanceolatis, flore solitario erecto, labii inferioris erecti laciniis filiformibus galeam lente curvam superantibus, labelli lamina lineari glabra, appendice penicillata. (*Gunn*, 751.)

Hab. Circular Head, *Gunn*; Hobarton, *J. D. H.*—(Fl. May–July.) (*v. v.*)

Distrib. Victoria.

A very slender species, 3–5 inches high, sometimes pubescent on the stem and flowers.—*Leaves* lanceolate, alternate, $\frac{1}{2}$ inch long. *Flowers* erect, about 1 inch long, including the ovary. *Galea* curved. *Lower lip* with its filiform laciniæ longer than the galea. *Labellum* very variable in breadth, almost sessile or unguiculate.—Very nearly allied to the *P. scabra* of Swan River, which has a more slender labellum, rather clavate at the tip. It may be a form of the *P. reflexa* or *revoluta.*

§ 4. *Radical leaves stellate or none. Flowers small, spiked, rarely solitary. Lower lip of perianth ascending.*

13. **Pterostylis aphylla** (Lindl. Gen. et Sp. Orch. 392); scapo florifero aphyllo bracteis 2–3 remotis instructo, floribus 1–2 erectis, galea apice incurva, sepalo dorsali acuminato, petalis obtusis, labio inferiore ascendente apice late bifido, laciniis distantibus brevibus uncinatis, labello lineari-oblongo incluso, appendice trifurca. (*Gunn,* 903.) (TAB. CXVI. *C.*)

HAB. Heathy plains: near Circular Head, *Gunn;* Huon River, *Oldfield;* Cheshunt, *Archer.*—(Fl. Nov., Dec.)

DISTRIB. Swan River (*Drummond*).

A very curious little species, of which I have seen no leaves, but Archer says these appear in winter.—*Scape* rather stout, strict, 3–6 inches high, bearing two or three remote, small, sheathing bracts. *Flowers* one or two in my Tasmanian specimens, four in a Swan River one, erect, about $\frac{1}{2}$–$\frac{2}{3}$ inch long, including the ovary, puberulous or glabrous, erect. *Galea* with a short incurved apex. *Dorsal sepal* acuminate, rather shorter than the blunt petals. *Petals* much contracted and obliquely cuneate at the base, shortly sickle-shaped, white, with red-brown nerves and margins. *Lower lip* closely applied to the galea, shorter than it is, with two short, incurved, uncinate teeth separated by a wide sinus. *Labellum* small, included, linear-oblong, with a three-forked apex. *Column wings* with a descending auricle, and ascending, subulate, uncinate arm.—PLATE CXVI. *C.* Fig. 1, flower; 2, petal; 3, labellum; 4, lower lip and labellum; 5, column:—*all magnified.*

14. **Pterostylis parviflora** (Br. Prodr. 327); foliis in caulibus non floriferis stellatis petiolatis parvis ovatis acutis, scapo remote bracteato gracili, floribus 3–8 spicatis remotiusculis erectis, galea apice abrupte deflexo, sepalo dorsali acuminato petalis longe acuminatis breviore, labio inferiore erecto late bifido, segmentis brevibus uncinatis galea brevioribus, labello incluso lineari-oblongo, appendice apice tricruri.—*Lindl. l. c.* 389. (*Gunn,* 759.)

HAB. Sandy soil; probably not uncommon, but easily overlooked: Circular Head, *Gunn;* Huon River, *Oldfield;* Hobarton, *J. D. H.*—(Fl. Oct.) (*v. v.*)

DISTRIB. New South Wales.

I have referred this plant to Brown's *P. parviflora,* with the insufficient description of which it quite agrees; few-flowered specimens of *P. aphylla* may however equally be included in that description. The present plant is taller, more slender than *P. aphylla,* has a scape 3–10 inches high, three- to eight-flowered (rarely more), and bears small, ovate, petiolate leaves, which are borne on my specimens on lateral shoots at the base of the flowering scapes. It further differs from *P. aphylla* in the much longer and deflexed apex of the galea, and in the longer acuminate petals.

§ 5. *Leaves all cauline, alternate. Scape one- to four-flowered. Lower lip of perianth deflexed.*

15. **Pterostylis longifolia** (Br. Prodr. 327); scapo 1–5-floro gracili, foliis alternis anguste lanceolatis acuminatis, perianthio horizontali, galea lata abrupte apiculata, labio inferiore deflexo breviter bifido, lobis ovatis apice subulatis, labello brevissimo ciliato oblongo apice dentato, appendice brevi obtusa.—*Lindl. l. c.* 388. (*Gunn,* 345.) (TAB. CXVII. *B.*)

HAB. Common in dry soil in forest land.—(Fl. Oct.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

I have followed Lindley in referring this common plant to Brown's *P. longifolia.*—*Stem* very slender, wiry, 4–14 inches tall, leafy throughout its length, with narrow-lanceolate or subulate-acuminate leaves. *Flowers* 3–5 (sometimes 6–8, but rarely), pale-green, about $\frac{1}{2}$ inch long, puberulous or glabrous. *Galea* horizontal, broad, suddenly acuminate; dorsal sepal rather longer than the petals. *Lower lip* suddenly bent down, bifid; lobes ovate,

acuminate. *Labellum* very small, short, ciliated, with a short, blunt appendix. *Wings of column* ciliated, shortly auriculate.—PLATE CXVII. *B.* Fig. 1, front, and 2, side view of labellum; 3, front, and 4, side view of column: —*all magnified.*

Gen. X. CHILOGLOTTIS, *Br.*

Perianthium bilabiatum; sepalo dorsali fornicato, lateralibus labello suppositis. *Petala* ascendentia v. reflexa. *Labellum* unguiculatum, basi appendiculata; appendice lingulata v. columnari; disco glanduloso. *Columna* elongata, apice bifida. *Anthera* terminalis. *Pollinia* 4.—Herbæ *terrestres, caudiculis radicalibus basi tuberiferis*; foliis 2, *radicalibus*; scapo *infra florem unibracteato, unifloro*; floribus *luridis, suberectis*; pedicello *post anthesin elongato.*

A very peculiar-looking genus, closely allied to *Cyrtostylis*, but of a much more robust habit, and two-leaved. Only three species are known, one confined to Tasmania, a second found in the same island and Australia, and a third hitherto observed only in the Auckland and Campbell Islands, south of New Zealand.—*Root* a simple, elongated, descending caudicle, terminating in a round naked tuber, and giving off from near the base of the stem other caudicles, whose tubers bear stems in the following year. *Leaves* two, at the base of the stem, with a sheath round their base. *Scape* rather stout, erect, with one sheathing bract near the middle. *Flower* rather large, erect; *dorsal sepal* arched, acute; *lateral* placed under the labellum, curved downwards. *Petals* narrow, ascending or deflexed. *Labellum* clawed, rather fleshy, simple, ovate, with large, erect, capitate glands on the disc. (Name from χειλος, *a lip*, and γλωττα, *the tongue*; from the form of the appendix of the first-described species.)

1. **Chiloglottis diphylla** (Br. Prodr. 322); foliis petiolatis ovato-lanceolatis, scapo gracili, sepalo dorsali lineari apicem versus dilatato, lateralibus basi connatis, petalis deflexis, appendice labelli spathulata lingulata, disco glandulis stipitatis confertis, columna basi appendice transversa.—*Lindl. Gen. et Sp. Orch.* 386; *Bauer, Illustr. t.* 8. Acianthus? bifolius, *Br. Prodr.* 322. Epipactis reflexa, *Lab. Nov. Holl. t.* 211. *f.* 1. (*Gunn,* 914.)

HAB. Shaded places: Woolnorth, Circular Head, Cheshunt, etc., *Gunn, Archer.*—(Fl. April, May.)

DISTRIB. New South Wales.

A slender species, 3–6 inches high, with two petiolate, ovate, lanceolate leaves. *Flowers* about $\frac{2}{3}$ inch across. *Sepals* narrow, linear; lateral united at the base, terete at the apex, deflexed or even recurved. *Petals* linear, deflexed. *Labellum* spathulate, dark red-brown, with a large black-purple ligulate gland at the base, backed with smaller capitate ones, and a crowd of pedicelled glands on the disc.—The form and size of the appendix and glands are variable, and sometimes they resemble an ant sitting on the disc of the labellum: (see Ross's Hobarton Almanac, 1833.)

2. **Chiloglottis Gunnii** (Lindl. Gen. et Sp. Orchid. 387); robusta, foliis ovatis breve petiolatis, scapo brevi, sepalo dorsali unguiculato spathulato acuminato, lateralibus ovato-subulatis ascendentibus, petalis erectis, labello trulliformi, glandulis sparsis, appendice columnari. (*Gunn,* 913.) (TAB. CVIII. *B.*)

HAB. Shaded banks, etc.: Circular Head, Cheshunt, and Hobarton, *Gunn, Archer,* etc.—(Fl. Oct.)

A small, robust species, 2–4 inches high. *Leaves* sessile, or shortly petioled. *Flowering scape* generally thick. *Flower* an inch across, with very much broader sepals and petals than *C. diphylla*, the upper sepal unguiculate and spathulate, the lateral not united at the base, ascending and recurved. *Petals* ascending. *Labellum* of the form of a trowel, with numerous stipitate glands, which often are so arranged as to resemble an ant, as in *C. diphylla.*—In both species the pedicel of the flower elongates remarkably after flowering.—PLATE CVIII. *B.* Fig. 1, labellum; 2, column; 3, pollen:—*all magnified.*

Gen. XI. MICROTIS, *Br.*

Perianthium herbaceum, ringens. *Sepalum* dorsale cum petalis parvis linearibus in galeam connivens; lateralia labello supposita. *Labellum* dissimile, oblongum, obtusum, integerrimum v. lobatum, callis glandulisve instructum. *Columna* nana, infundibuliformis, utrinque auricula membranacea aucta. *Anthera* terminalis, mutica. *Pollinia* 4.—Herbæ *terrestres, glabræ;* radicibus *e tuberis oblongis nudis indivisis;* folio *caulino solitario, tereti, fistuloso, basi vaginante;* floribus *herbaceis, parvis, viridibus, dense spicatis.*

A common genus in temperate Australia and New Zealand, of which about a dozen species are known. A species is found in New Caledonia, and another in Java. These are very variable in stature, but uniform in general characters, forming rather stout, green herbs, with small, green, densely spiked flowers, and a single, terete, fistulose leaf.—*Roots* of undivided oblong tubers. *Perianth* herbaceous, green, of one dorsal, rather large, concave sepal, parallel to and on each side of which is a small linear sepal. *Lateral sepals* placed under the green, oblong labellum, which is furnished with granulated, callous bodies on its surface. *Column* small, terete, with expanded margins. (Name from *μικρος, small,* and *ους, an ear.*)

I have characterized three species of this genus, following Brown's and Lindley's descriptions, and Archer's notes and drawings, but I am unable to distinguish the dried specimens, and I suspect that many intermediate and aberrant forms will be found.

1. **Microtis pulchella** (Br. Prodr. 321); sepalis lateralibus petalisque patentibus ovali-oblongis obtusiusculis acuminatisve, labello oblongo bilobo apicem versus callo granuloso, margine crispato, callis basi confluentibus.—*Lindl. Gen. et Sp. Orch.* 395. (*Gunn,* 915, 918.) (Tab. CXVIII. *A.*)

Hab. Abundant in sandy soil throughout the Island.—(Fl. Nov., Dec.)

Distrib. New South Wales, Victoria, and South-west Australia.

Stems 6 inches to 2 feet high, slender or robust. *Flowers* very variable in size, as is the ovarium. *Sepals* and *petals* blunt. *Labellum* with crisped margins, oblong, blunt, or two-lobed at the apex, having one granular callus more or less developed towards the apex, and two confluent ones at the base.—Plate CXVIII. *A.* Fig. 1, front, and 2, side view of flower; 3, labellum; 4, front, and 5, side views of column:—*all magnified.*

2. **Microtis arenaria** (Lindl. Gen. et Sp. Orch. 396); sepalis lateralibus petalisque ovali- v. lineari-oblongis obtusis acuminatisve, labello oblongo retuso margine planiusculo apicem versus callo granuloso, callis basi confluentibus.—*An* M. media, *Br.?* (*Gunn,* 354, 916.) (Tab. CXVIII. *B.*)

Hab. Sandhills near the sea: Circular Head, *Gunn.*—(Fl. Dec.)

Distrib. New South Wales and Victoria.

Quite similar to large states of *M. pulchella,* and only distinguishable by the more plane labellum, that has not crisped margins, is less strongly lobed, and has the calli less developed.—Plate CXVIII. *B.* Fig. 1, front, and 2, side view of flower; 3, labellum; 4, front, and 5, side view of column:—*all magnified.*

3. **Microtis rara** (Br. Prodr. 321); spica rariflora, sepalis lateralibus revolutis petalisque lineari-oblongis acutis, labello oblongo retuso marginibus subundulatis callis basi confluentibus apice subcalloso.—*Lindl. Gen. et Sp. Orch.* 396. M. frutetorum, *Schlecht.* (*Gunn,* 917.)

Hab. Wet places: Circular Head, Hampshire Hills, etc., *Lawrence, Gunn;* Cheshunt, *Archer.*—(Fl. Dec.)

Distrib. New South Wales and Victoria.

My Tasmanian species are a different-looking plant from either of the preceding, but not easily characterized, except by being more slender, with more sparse and more erect flowers.—*Lateral sepals* and *petals* acute, the former acuminate. *Labellum* with less undulated margins than in *pulchella,* and a more obscure callus towards the tip.

4. **Microtis parviflora** (Br. Prodr. 321); spica densa, floribus parvis, sepalis lateralibus oblongis revolutis petalisque obtusis, labello lineari-oblongo obtuso marginibus planiusculis nudis, disci dimidio superiore ecalloso.—*Lindl. Gen. et Sp. Orch.* 395; *Bot. Mag.* 3377; *Endl. Ic. Gen.* 1588.

HAB. Circular Head, *Gunn;* dry ground near Cheshunt, *Archer.*—(Fl. Dec.)

DISTRIB. Tropical Australia, New South Wales, and Victoria.

Smaller than any of the foregoing species, with smaller flowers, shorter ovaries, and a short, oblong, blunt, nearly plane labellum, its upper half thickened, but hardly callous.

Gen. XII. ACIANTHUS, *Br.*

Sepala patentia, acuminata v. aristata; lateralia labello supposita. *Petala* minora, acuminata. *Labellum* liberum, integrum, basi bicallosum, disco inappendiculato. *Columna* semiteres, clavata, inauriculata. *Anthera* terminalis, persistens, 2-locularis, recumbens. *Pollinia* 8, v. 4 bipartita.—Herbæ *parvæ, teneræ, membranaceæ;* tuberibus *globosis, indivisis, caudicem terminantibus, novellis pedicellatis;* folio *solitario, subsessili, late cordato, reticulato-venoso;* floribus *paucis, racemosis.*

A very small genus, of delicate, shade-loving, inconspicuous plants, found in temperate Australia and New Zealand.—*Roots* of prostrate caudices, ending in small, round tubers. *Stems* slender and succulent, with one broadly-cordate, sessile, membranous, reticulated leaf. *Flowers* few, red-brown, racemose. *Sepals* and *petals* slender, acuminate, or terminated in a subulate point. *Labellum* projecting, undivided, with a naked disc, and two calli at its base. *Column* long, slender, not dilated into auricles. *Anther* deciduous, placed rather behind the apex of the column (as in *Neottieæ*). (Name from ακυς, *a needle*, and ανθος, *a flower;* in allusion to the pointed perianth.)

1. **Acianthus caudatus** (Br. Prodr. 321); floribus 1–3, sepalo dorsali longissime setaceo acuminato, lateralibus brevioribus petalis triplo longioribus, labello lanceolato.—*Lindl. Gen. et Sp. Orch.* 397. (*Gunn*, 758.) (TAB. CXIX. *B.*)

HAB. Common in shaded moist woods: Woolnorth and Circular Head, *Gunn;* Chudleigh, *Archer;* Hobarton, *J. D. H.*—(Fl. Oct.) (*v. v.*)

DISTRIB. New South Wales.

Stems 3–5 inches high. *Leaf* acuminate, with often undulated margins. *Flowers* one to three, deep, dark brown-purple. *Dorsal sepal* extremely long and narrow, erect, nearly an inch long, much longer than the lateral, which are twice as long as the petals.—PLATE CXIX. *B.* Plant of the natural size.

2. **Acianthus exsertus** (Br. Prodr. 321); floribus racemosis, sepalo dorsali ovato-lanceolato aristato, lateralibus subulato-lanceolatis æquilongis, petalis horizontaliter reflexis sepalis ½ brevioribus lanceolatis acuminatis, labello apice papilloso.—*Lindl. l. c.* 397. (*Gunn*, 752.) (TAB. CXIX. *A.*)

HAB. Circular Head, in light soil, *Gunn;* rocky ground near Cheshunt, *Archer.*—(Fl. Oct.)

DISTRIB. New South Wales and Victoria.

Similar in habit to *A. caudatus*, but with more (four to six) flowers, which are much smaller, with far shorter, paler-coloured sepals and petals, whose slender points are thickened at the tips.—PLATE CXIX. *A.* Fig. 1, flower; 2, labellum; 3, front, and 4, side view of column; 5, pollen:—*all magnified.*

Gen. XIII. CYRTOSTYLIS, *Br.*

Sepala patentia, linearia (non aristata), dorsali erecto, lateralibus labello suppositis, æquilongis. *Petala* demissa. *Labellum* porrectum, planum, obtusum, indivisum, basi bicallosa. *Columna* gracilis, subgeniculata, versus apicem dilatata. *Anthera* bilocularis, terminalis, persistens, teres. *Pollinia* 4.—Herbæ *habitu etc.* Acianthi.

Very closely allied to *Acianthus*. Only one Australian species is known, and several New Zealand ones. *C. reniformis* is a delicate herb, 4–8 inches high, with the general habit and appearance of *Acianthus*.—*Leaf* oblong-cordate, or almost orbicular-cordate. *Flowers* three to six, racemose, pale purplish-brown, very membranous, about ⅔ inch long. *Sepals* and *petals* nearly equal in length, narrow-linear, not aristate; dorsal sepal erect, the lateral and petals pendent, and pointing rather forwards. *Labellum* narrow-linear, oblong, with two deeper-coloured, raised mesial ridges. *Column* slender, inflexed, with membranous wings towards the apex. (Name from κυρτος, *short*, and στυλος, *a column;* in allusion to the short column.)

1. **Cyrtostylis reniformis** (Br. Prodr. 322); folio oblongo v. orbiculari-cordato, perianthii foliolis anguste linearibus acutis, labello lineari-oblongo medio obscure bicarinato.—*Lindl. l. c.* 398. (*Gunn*, 615.) (Tab. CXIX. *C.*)

Hab. Common in damp shaded woods and banks.—(Fl. Sept.) (*v. v.*)

Distrib. New South Wales, Victoria, and Swan River.

Plate CXIX. *C.* Fig. 1, column and labellum; 2, labellum; 3, column; 4 and 5, pollen:—*all magnified.*

Gen. XIV. ERIOCHILUS, *Br.*

Perianthium bilabiatum, glandulosum. *Sepalum* dorsale breve, erectum; lateralia unguiculata, labello supposita. *Petala* ascendentia, linearia. *Labellum* unguiculatum, inappendiculatum, indivisum, pubescens, eglandulosum. *Columna* semiteres, non dilatata. *Anthera* terminalis. *Pollinia* 4.—Herbæ *simplices, erectæ, glandulosæ;* caule *gracili, paucifloro, unifolio, florifero aphyllo, basi tubere globoso terminato;* folio *ovato;* floribus *pallidis.*

A small Australian genus, of about six species, the majority of them natives of Swan River. *E. autumnalis* is a slender, glandular, pubescent plant, 4–10 inches high, with a round, tuberous root, a small, ovate, sessile leaf, produced at a different season from the flower, and one or two terminal, pale rose-coloured flowers, ½–⅔ inch long.—*Bract* short, blunt. *Ovary* slender. *Perianth* two-lipped; the upper lip of a linear, erect dorsal sepal, and two similar petals; the lower of two petioled, elliptic-lanceolate, acuminate, prominent sepals. *Labellum* short, recurved, pubescent, entire, without glands or appendages. *Column* straight, its margins hardly dilated. (Name from εριος, *hairy*, and χειλος, *a lip.*)

1. **Eriochilus autumnalis** (Br. Prodr. 323); folio epigæo ovato acuminato, scapo 1–3-floro floribusque glanduloso-puberulis, bracteis obtusis membranaceis.—*Lindl. Gen. et Sp. Orch.* 427; *Endl. Ic. Gen. t.* 1592. (*Gunn*, 607.) (Tab. CXX. *A.*)

Hab. Common in open and somewhat dry ground throughout the Island, *Archer, Gunn.*—(Fl. Sept.)

Distrib. New South Wales and Victoria.

I do not observe the petals to be dilated and denticulate, as described by Lindley.—Plate CXX. *A.* Fig. 1, flower; 2, labellum; 3, gland; 4, front, and 5, side view of column; 6, pollen:—*all magnified.*

Gen. XV. CALADENIA, *Br.*

Perianthium bilabiatum, extus glandulosum. *Sepala* lateralia labello supposita, dorsale erectum. *Petala* erecta v. patentia. *Labellum* unguiculatum, cucullatum, trilobum v. abrupte angustatum; disco glandulis seriatis cristato. *Columna* membranaceo-dilatata. *Anthera* terminalis. *Pollinia* 4, semibiloba.—Herbæ *pubescentes, pilosæ v. villosæ;* caudice *subterraneo, tuberibus terminato;* folio *solitario, radicali v. caulino, basi vaginato;* scapo *medio* 1-*bracteato;* floribus 1–4, *colore variis.*

A large extratropical Australian genus, of which about 40 species are known, and there are several others natives of New Zealand.—Glandular, sometimes villous, pubescent herbs, with few root-fibres terminating in globose

tubers, and one sessile, sheathing, radical leaf. *Flowers* glandular, solitary or few, of all colours, large or small, sometimes with very long, slender sepals and petals, and commonly called Butterfly-plants in Tasmania. *Dorsal sepal* generally concave, pointing forwards; lateral placed beneath the labellum. *Petals* erect or spreading. *Labellum* clawed, cucullate, with incurved, membranous, often fimbriate margins, entire or three-lobed, generally much contracted beyond the middle, its disc with two or more rows of pedicelled glands. *Column* with membranous margins. (Name from καλος, *beautiful*, and αδην, *a gland;* in allusion to the glandular labellum.)

§ 1. Leptoceras (Br.).—*Petals linear, erect, longer than the sepals.*

1. **Caladenia Menziesii** (Br. Prodr. 325); glanduloso-pubescens, folio ovato-lanceolato v. lineari-oblongo, scapo stricto 1–2-floro, petalis erectis linearibus strictis sepalis duplo longioribus atro-purpureis, labello abrupte angustato recurvo, disci glandulis biseriatis.—Leptoceras Menziesii, *Lindl. Gen. et Sp. Orch.* 416; *Endl. in Plant. Preiss.* ii. 6. (*Gunn*, 348, 753.) (Tab. CXXI. *A.*)

Hab. Common in moist places throughout the Island.—(Fl. Oct., Nov.) (*v. v.*)

Distrib. Victoria to Swan River.

A span to a foot high, covered with glandular pubescence.—*Leaf* very variable in size and form, 2–5 inches long, ovate-lanceolate to linear-oblong. *Flowers* one or two, rose-coloured, distinguished at once by the linear, erect, dark-purple petals. *Odour* very sweet, of hyacinths.—Plate CXXI. *A.* Fig. 1, side, 2, back, and 3, front views of labellum; 4, front, and 5, side views of column; 6, glands of ditto:—*all magnified.*

§ 2. Calonema (Lindl.).—*Sepals and petals much elongated and caudate at the apex. Labellum fimbriated. Leaves slender in the Tasmanian species.*

2. **Caladenia filamentosa** (Br. Prodr. 324, non Lindl.); molliter patentim pilosa, sepalis petalisque æqualibus longissime filiformibus puberulis atro-rufis, labello apice angustato elongato revoluto nudo marginibus crenulatis, disco biseriatim glanduloso, columna basi ecallosa apice biauriculata. (Tab. CXXI. *B.*)

Hab. Forests: Cheshunt and Georgetown, *Archer.*—(Fl. Dec.)

Distrib. New South Wales, Victoria, and South Australia.

Archer's specimens of this fine species are the only Tasmanian ones I have seen; they are about a span long, and covered with long, patent, soft hairs. *Flowers* of a dark reddish-brown colour, $1\frac{1}{2}$–2 inches broad; the *sepals* and *petals* long-linear, but not thickened at the apex. *Lip* with a rather long, slender, revolute apex, slightly crenulate, with two short series of glands on the disc. *Column* auriculate at the apex.—Plate CXXI. *B.* Fig. 1, column and labellum; 2 and 3, labellum; 4, column:—*all magnified.*

3. **Caladenia dilatata** (Br. Prodr. 325); molliter patentim villosa, floribus pallidis, sepalis longe filiformibus apice interdum dilatatis vix puberulis, petalis brevioribus anguste linearibus, labello medio dilatato profunde pectinatim lacero dein abrupte angustato crenulato, glandulis disci confertim 4-seriatis, columna basi bicallosa apicem versus dilatata.—C. filamentosa, *Lindl. Gen. et Sp. Orch.* 421. C. tentaculata, *Schlecht.* (*Gunn*, 910.) (Tab. CXXII. *B.*)

Hab. Sandy soil: Circular Head, *Gunn;* forest lands near Cheshunt, *Archer.*—(Fl. Dec.)

Distrib. South Australia, Victoria.

A very elegant species, more villous than *C. filamentosa*, and with paler flowers, easily recognized by the sepals being linear-oblong for half their length, and then filiform, much longer than the petals, and being often somewhat dilated towards the tips; further also by the labellum being very broad at the middle, its margins there pectinate, and suddenly contracting to a narrow, crenulate, recurved apex; also by the four rows of long, purple glands on the deep-purple lip, and by the winged, but not auriculate, upper one-third of the column.—Plate CXXII. *B.* Fig. 1, column and labellum; 2 and 3, labellum; 4, column; 5, pollen; 6, hair of leaf:—*all magnified.*

4. **Caladenia clavigera** (A. Cunn. MSS. in Lindl. Gen. et Sp. Orch. 422); patentim villosissima, floribus pallide rufis glabris, sepalis apice clavellatis petalisque subæqualibus longissime filiformibus, labello medio dilatato integro deinceps abrupte angustato crenato apice recurvo, glandulis disci 4-seriatis, columna supra medium dilatata basi bicallosa. (*Gunn*, 344.) (Tab. CXXII. *A.*)

Hab. Circular Head? *Gunn;* west side of Tamar River, near Whirlpool Reach, *Archer*.—(Fl. Nov.)

Distrib. New South Wales and Victoria.

A very elegant species, about a span high, one- rarely two-flowered, covered with long, patent, villous hairs.—*Flowers* 1 inch across, nearly glabrous. *Sepals* and *petals* equal in length, pale-reddish, the former with club-shaped tips. *Labellum* like that of *C. dilatata*, but not pectinate, deep red-purple at the tip. *Column* gradually dilated from above the middle. *Ovary* pubescent.—Plate CXXII. *A.* Fig. 1, column and petal; 2, labellum; 3, column; 4, apex of sepal:—*all magnified.*

5. **Caladenia Patersoni** (Br. Prodr. 325); molliter patentim villosa, floribus pallidis pubescentibus, ovariis tomentosis, sepalis longissime filiformibus petalis consimilibus longioribus, labello medio vix dilatato argute serrulato et pectinato sensim angustato (interdum longissime caudato) revoluto, disci pallidi glandulis parvis 6-seriatis, ungue basi 4-glanduloso, columna basi bicallosa leviter dilatata. (*Gunn*, 610, 908, 909.) (Tab. CXXIII. *A.*)

Hab. Abundant in poor soil throughout the Island.—(Fl. Oct., Nov.) (*v. v.*)

Distrib. New South Wales, Victoria, and South Australia.

A very common and elegant plant, variable in size and colour, also in the length of the sepals and petals; best known by the form of the (usually pale) labellum, which is very slightly broader in the middle, and gradually tapers to a revolute point; the margins of the labellum about the middle are deeply pectinate, but not like those of *C. dilatata*, and the disc bears six rows of glands.—*Scapes* often robust, 4–10 inches high, one- to three-flowered. *Leaf* 3–5 inches long, often ½ inch broad. *Ovary* very tomentose. *Flowers* varying from straw-colour, clouded with pale red, to reddish-purple, 1½–3 inches in diameter. *Sepals* and *petals* nearly equal, very long and slender, sometimes rather dilated towards the apex. *Labellum* gradually narrowed to a point, that is sometimes an inch long, and at others short.—Plate CXXIII. *A.* Fig. 1, column and labellum; 2, labellum; 3, column; 4, pollen:—*all magnified.*

6. **Caladenia pallida** (Lindl. Gen. et Sp. Orchid. 421); breviter patentim pilosa, bractea scapo breviter foliaceo, floribus pallidis glabris, sepalis e basi lanceolatis longissime acuminatis apice scaberulis petalis ⅓ longioribus, labello ovato-lanceolato a medio paulo dilatato pectinato sensim angustato crenato dentato revoluto, disci concoloris glandulis 4-seriatis, columna modice longitudinaliter alata. (*Gunn*, 907.)

Hab. Circular Head, abundant, *Gunn*.—(Fl. Oct., Nov.)

Distrib. South Australia.

A very elegant species, and quite distinct from any of the foregoing, easily recognized by the pale colour of its flowers, which are smaller, and the sepals and petals broader in proportion to their length.—*Leaf* narrow-linear, almost glabrous. *Scape* very slender, a span and upwards high, covered with soft, spreading pubescence, the bract at the middle with an elongated linear lamina, ½ inch long. *Flowers* an inch across, pale, dirty straw-coloured. *Sepals* sometimes thickened towards their apices. *Labellum* deeply and closely crenulate towards its apex. *Column* with narrow wings almost throughout its length.

§ 3. Eucaladenia (Lindl.).—*Sepals and petals spreading, nearly equal, not having long, acuminate or caudate apices.*

7. **Caladenia latifolia** (Br. Prodr. 324); patentim pilosa, folio (magno) lineari-oblongo acuto v. obtuso, floribus 1–3 erectis roseis, ovario tomentoso, sepalis petalisque oblongo-lanceolatis obtusis subæ-

qualibus, labelli trilobi glandulis biseriatis, lobis lateralibus amplis intermedio lanceolato marginibus longe glanduloso-appendiculatis, disco eglanduloso, columna vix alata, anthera longe mucronata.—*Lindl. Gen. et Sp. Orch.* 419. (*Gunn*, 750.)

HAB. Sandy soil: Woolnorth, Circular Head, and Georgetown, *Gunn;* hills near Hobarton, *Archer.*—(Fl. Sept., Oct.)

DISTRIB. Victoria, *Adamson, Robertson.*

A very pretty plant, readily distinguished from its allies by its broad, large leaf, and pink (rarely white) flowers. I have examined two specimens, collected by Archer, near Hobarton, of which the flowers were blue when fresh. —*Leaf* radical, horizontal, 2–6 inches long, linear-oblong, more or less hairy. *Scape* with spreading hairs, one- to three-flowered. *Flowers* nearly an inch broad. *Sepals* and *petals* lanceolate-oblong, blunt (acute, *Br.*). *Labellum* deeply three-lobed; the lateral lobes broad, entire, embracing the column. *Anther* with a long, erect mucro.

8. **Caladenia barbata** (Lindl. Gen. et Sp. Orchid. 418); pubescenti-pilosa, folio lineari scapo breviusculo breviore, bractea foliacea patente, flore solitario cæruleo erecto, sepalis petalisque lineari-oblongis lanceolatisve subacutis, labello obscure trilobo, lobis omnibus fimbriatis intermedio glanduloso, disci glandulis sub-6-seriatis, columna obscure alata, anthera breviter mucronata.—C. unguiculata, *Lindl. l. c.* (*Gunn*, 347.) (TAB. CXXIII. *B.*)

HAB. Abundant in grassy pastures, etc., throughout the Island.—(Fl. Sept., Oct.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

This is the common blue *Caladenia* of Tasmania, characterized by its linear leaf, solitary, nearly erect flower, $\frac{1}{2}$–1 inch broad, equal, spreading, lanceolate-oblong or linear-lanceolate, subacute sepals and petals, by the labellum being obscurely two-lobed and fimbriate to the apex, and by the short mucro to the anther.—PLATE CXXIII. *B.* Fig. 1, column and labellum; 2, labellum; 3, column; 4, glands of ditto:—*all magnified.*

9. **Caladenia cærulea** (Br. Prodr. 327); pilosula, folio lineari, bractea scapo appressa, flore solitario erecto cæruleo, sepalis petalisque æqualibus lineari-lanceolatis acutis, labello 3-lobo, lobis integerrimis transverse vittatis.—*Lindl. l. c.*

HAB. Tasmania, *Brown.*

DISTRIB. New South Wales.

I have seen no Tasmanian specimens of this very distinct species, which is allied to *C. barbata*, but is more slender, less hairy, with a small, appressed bract on the scape; a deeply three-lobed labellum, with broad, entire, lateral lobes; and a small, also entire, revolute middle lobe.

10. **Caladenia carnea** (Br. Prodr. 324); pilosula, folio lineari, scapo 1- (rarius 2-)floro, sepalis petalisque roseis subæqualibus, sepalo dorsali erecto v. recurvo columnam roseo-vittatam non velante, labelli vittati 3-lobi disco glandulis 2-seriatis ornato, lobis lateralibus rotundatis integerrimis dentatisve intermedio brevi revoluto longitudinaliter fimbriato disco nudo.—*Lindl. Gen. et Sp. Orchid.* 417; *Endl. Icon. t.* 1594. (*Gunn*, 606, 912.) (TAB. CXXIV. *A.*)

HAB. Abundant throughout the Island, in grassy places and open forest land.—(Fl. Oct., Nov.) (*v. v.*)

DISTRIB. South-eastern Australia, from the tropics to South Australia.

A very common, slender, generally one-flowered species, 4–8 inches high, with pilose scape and long-linear leaf.—*Flowers* pink, about $\frac{1}{2}$–$\frac{2}{3}$ inch across. *Sepals* and *petals* nearly equal, linear-lanceolate, acute; dorsal sepal erect, not concave, or covering the column, as in all the following species. *Labellum* three-lobed, transversely banded with pink (as is the column); lateral lobes rounded, entire or toothed; disc with two series of yellow, capitate glands; middle lobe small, yellow, revolute, fimbriate along the edges, its disc naked.—PLATE CXXIV. *A.*

Fig. 1, column and labellum; 2 and 3, views of labellum; 4, column; 5, glands of labellum; 6, pollen:—*all magnified.*

11. **Caladenia congesta** (Br. Prodr. 324); pilosula, folio lineari, scapo 1–3-floro, floribus roseis, sepalis petalisque subæquilongis acuminatis, sepalo dorsali fornicato columnam velante, labelli trilobi non vittati glandulis atro-purpureis 4-seriatis depressis confertissimis, infimis longioribus stipitatis, lobis lateralibus longioribus quam latis subacutis, intermedio atro-purpureo recurvo margine integerrimo.—*Lindl. Gen. et Sp. Orchid.* 421. (Tab. CXXIV. *B*.)

Hab. Tasmania, *Paterson;* open forest land, Cheshunt and Port Sorrell, *Archer*.—(Fl. Nov.)

Distrib. New South Wales and South-western Australia.

Similar at first sight to *C. carnea*, as indeed are all the following species, but very distinct. It may be known by the arched dorsal sepal, which more or less conceals the column, by the absence of red bands on the column and labellum, by the long lateral lobes of the labellum, by its deep black-purple middle lobe, with entire margins, and especially by the glands of the labellum, which are black-purple, crowded in four series, of which the basal ones are longest, and by their glands being continued on to the surface of the middle lobe.—Plate CXXIV. *B.* Fig. 1, column and labellum; 2 and 3, labellum; 4, column:—*all magnified.*

12. **Caladenia alata** (Br. Prodr. 324); pubescens, folio lineari, scapo elongato 3–5-floro, perianthii foliolis acuminatis, sepalo dorsali fornicato columnam velante roseo-vittato, labelli trilobi vittati disco glandulis 2- v. sub-4-seriatis, lobis lateralibus rotundatis integerrimis intermedio flavo plus minusve fimbriato.—*Lindl. l. c.* 418; *Smith, Ex. Bot.* 104. (*Gunn*, 755.) (Tab. CXXV. *A*.)

Hab. Probably a common species: sandy soil near Hobarton, *Gunn;* open forest land, Cheshunt, *Archer*.—(Fl. Nov.) (*v. v.*)

Distrib. New South Wales and Victoria.

I have referred this plant to Brown's *C. alata* with some hesitation; the glands on the disc of the labellum are often in four rows, though each pair of these are irregularly disposed, and often run together, whilst in some specimens there are decidedly only two rows; another important difference is in the middle lobe of the labellum, which is more or less crenate or fimbriate throughout its length, thus differing from Brown's character of "basi utrinque unidentato;" but I find the fimbriation of the middle lobe to vary a good deal in all the species. The lateral lobes of the labellum vary much in breadth.—This is a much taller plant than any other of this section, 10–18 inches high, with several (two to five) flowers (rarely one only) of a pale, dirty pink or whitish colour. The leaflets of the perianth vary much in size and relative shape, but all are acuminate; the dorsal sepal arches, and is about the same size as the petals; the lateral sepals are broader and longer. *Labellum* banded with pink; middle lobe yellow. *Column* also banded with pink.—Plate CXXV. *A.* Fig. 1 and 2, labellum; 3 and 4, column:—*all magnified.*

13. **Caladenia angustata** (Lindl. l. c. 420); pubescenti-pilosa, folio filiformi, scapo tenui 1–2-floro, floribus roseis, sepalis petalisque subæqualibus acuminatis dorsali fornicato columnam velante, labello (columnaque) roseo-vittato, disco glandulis sparsis 4-seriatis, lobis lateralibus angustis integerrimis intermedio flavo fimbriato basi glanduloso.—C. gracilis, *Br.? Prodr.* 324. (*Gunn*, 911.) (Tab. CXXV. *B*.)

Hab. Probably common: Circular Head, Cheshunt, Hobarton, etc., *Paterson, Gunn, Archer*.—(Fl. Oct.) (*v. v.*)

Distrib. New South Wales and Victoria.

A small, slender species, very similar indeed to *C. carnea*, but with an arched dorsal sepal.—*Leaves* very narrow. *Scape* 4–8 inches high. *Flowers* generally solitary, pink. *Sepals* and *petals* acuminate. *Labellum* with rather narrow, entire lateral lobes; disc with four rows of small, scattered glands, that are produced on to the yellow-red middle lobe; the latter is more or less crenate or fimbriate: in some of Mr. Archer's specimens the tooth-

ing is confined to the small process on each side, at the very base, and these I was inclined to refer to Brown's *C. alata*, but the glands are decidedly in four rows, and the middle lobe of the labellum is also glandular.—PLATE CXXV. *B.* Fig. 1, column and labellum; 2, labellum; 3, glands of ditto; 4, column; 5, pollen:—*all magnified.*

Gen. XVI. GLOSSODIA, *Br.*

Perianthium patens; sepalis petalisque subæqualibus. *Labellum* brevius, indivisum, eglandulosum, basi appendice elongata instructum. *Columna* membranaceo-alata. *Anthera* terminalis. *Pollinia* 4, compressa.—Herbæ *terrestres, pilosæ;* radicibus *tubere tunicato terminatis;* folio *solitario, radicali, patente;* scapo 1-*floro, gracili,* 1-*bracteato;* flore *majusculo, cæruleo, extus glanduloso;* pedicello *basi bracteato;* appendice *labelli linguam serpentis æmulante.*

The few known species of this genus are all of them Australian, and extremely nearly allied to *Caladenia*, of which indeed they may be considered a section, with no glands on the disc of the labellum, and a solitary, bifid, long appendix at the base of that organ, resembling somewhat a serpent's tongue, whence the name.—*G. major* is a slender plant, 5–12 inches high, covered with patent hairs; it has a linear-oblong, horizontal, radical leaf, one- or two-flowered scape, with a bract at the middle, and another beneath the flower. *Flower* about 1 inch across, pale blue. *Sepals* and *petals* pale blue, linear-oblong, blunt.

1. **Glossodia major** (Br. Prodr. 326); labello ovato acuminato basi pubescente, appendice apice bilobo.—*Lindl. Gen. et Sp. Orchid.* 423; *Endl. Icon. t.* 41. (*Gunn*, 608.) (TAB. CXX. *B.*)

HAB. Common in poor sandy soil throughout the Colony.—(Fl. Oct., Nov.) (*v. v.*)

DISTRIB. New South Wales, Victoria, and South Australia.

PLATE CXX. *B.* Fig. 1 and 2, labellum; 3 and 4, column:—*all magnified.*

Tribe III. GASTRODIEÆ.

Gen. XVII. GASTRODIA, *Br.*

Perianthii foliola in tubum apice 5-fidum basi ventricosum connata. *Labellum* parvum, posticum, unguiculatum, tubo inclusum. *Columna* basi antice stigmatifera. *Anthera* terminalis, decidua. *Pollinia* 4, per paria cohærentia, e granulis magnis elastice cohærentibus.—Herbæ *carnosæ, erectæ, aphyllæ, sordide albæ;* radice *tuberosa v. elongata, torta, tereti;* scapo *squamis distantibus vaginato;* floribus *racemosis, pendulis, albis v. ochroleucis.*

A remarkable genus, confined, as far as is at present known, to Australia and New Zealand, though probably some Malay Island and Indian plants will prove congeners. The *G. sesamoides* is a tall, robust, pale whity-brown, erect, leafless herb, 10–24 inches high, bearing a many-flowered, nodding raceme of pedicelled, tubular, pendulous flowers.—*Root* an elongated tuber, full of starch and mucilage, eaten by the aborigines. *Scape* with a few, remote, scarious bracts. *Flowers* about ⅔ inch long. *Ovary* small. *Perianth* gibbous at the base. *Sepals* and *petals* united into a subcampanulate, oblique tube. *Mouth* with three somewhat reflexed large lobes (apices of sepals), and two internal smaller ones (petals). *Labellum* included, posticous, unguiculate, contracted above and below the middle, with crenulated and rather verrucose margins and mesial ridge; *claw* concave from the base. *Column* elongated, hollow on the anterior face, scarcely winged. *Anther* short, terminal. *Pollen-masses* four, united in pairs. *Stigma* a viscid depression at the base of the column; from its base a canal leads to the cavity of the ovary. (Name from *γαστηρ, a stomach;* in allusion to the form of the flower.)

1. **Gastrodia sesamoides** (Br. Prodr. 350); radice tuberosa, perianthio breviter urceolato-campanulato, columna elongata.—*Lindl. Gen. et Sp. Orchid.* 384; *Endl. Icon. t.* 5. (*Gunn*, 359, 613.) (TAB. CXXVI.)

Hab. Dense humid forests, probably not uncommon, as at Circular Head, Table Cape, Georgetown, etc., *Lawrence, Gunn, Archer*.—(Fl. Nov., Dec.)

Distrib. New South Wales.

Plate CXXVI. Fig. 1 and 2, ovary, column, and labellum; 3, front view of column; 4 and 5, pollen; 6, grain of ditto; 7, seed; 8, nucleus of ditto in water:—*all magnified*.

Tribe IV. Vandeæ.

Gen. XVIII. DIPODIUM, *Br.*

Perianthium subregulare, patens. *Sepala* et *petala* subæqualia. *Labellum* unguiculatum; ungue magno, canaliculato, excavato; marginibus callosis, e columnæ basi productis; lamina cum ungue articulata, oblonga, integra; disco apicem versus barbato v. glanduloso. *Columna* semiteres, ungue labelli æquilonga. *Anthera* terminalis, decidua. *Pollinia* 2, globosa, cereacea, biloba, caudiculis distinctis glandulæ stigmatis affixa.—Herbæ *glabræ, terrestres, aphyllæ*; radice *e fibris crassis carnosis articulatis*; scapo *robusto, vaginato*; racemo *multifloro*; floribus *sublonge pedicellatis, patentibus, roseis*.

This remarkable genus is, so far as is at present known, confined to Australia and New Caledonia; it is one of the few terrestrial *Vandeæ* of the southern hemisphere. *D. punctatum* is a stout, erect, leafless, glabrous herb, 1–2 feet high.—*Roots* of many spreading, stout, articulate, terete fibres. *Scape* strict, erect, with a few appressed, short, sheathing, acuminate scales, which are more numerous and imbricating at the base of the scape. *Raceme* erect, 3–6 inches long. *Flowers* deep pink or purplish, on long, slender, spreading pedicels, $\frac{1}{2}$–$\frac{3}{4}$ inch long. *Perianth* spreading. *Sepals* and *petals* nearly equal, linear-oblong, obtuse, with recurved margins, rose-coloured, spotted with darker colour. *Labellum* about as long as the petals, of two parts, a broad, subconcave, thick, margined claw, with which the rather longer, oblong, thick, straight lamina is jointed; *lamina* glandular in the middle. *Column* straight, semiterete, as long as the claw of the labellum, terminated by a small, convex, deciduous, two-celled anther, below which is a small stigma. *Pollen-masses* two, globose, two-lobed, waxy, attached to the stigmatic gland by short caudicles. (Name from δις, *two*, and πους, *a foot*; in allusion to the caudicled pollen.)

1. **Dipodium punctatum** (Br. Prodr. 331); squamis radicalibus late ovatis acutis ecarinatis, superioribus ad basin fissis, bracteis lanceolatis, labello recto disco glanduloso.—Dendrobium punctatum, *Smith, Exot. Bot.* i. 21. *t.* 12; *Lindl. Gen. et Sp. Orchid.* 186; *Bot. Reg.* xxiii. *t.* 1980. (*Gunn*, 127.) (Tab. CXXVII.)

Hab. Forests: Circular Head, *Gunn*; Port Sorrell and Cheshunt, in stony and moist places, generally growing near *Eucalypti, Archer*.—(Fl. March?)

Distrib. New South Wales and Victoria.

Plate CXXVII. Fig. 1 and 2, labellum; 3 and 4, column:—*all magnified*.

Gen. XIX. GUNNIA, *Lindl.*

Perianthium ringens. *Sepala* lanceolato-oblonga; dorsale erectum; lateralia subfalcata, ungui elongato labelli adnata. *Petala* lanceolata, ascendentia. *Labellum* longe unguiculatum, porrectum; lamina 3-loba, disco tuberculato, mucrone inflexo, lobis lateralibus late oblongis, obtusis, ascendentibus, conniventibus. *Columna* brevis, semiteres, aptera, rostello bifido. *Anthera* 2-locularis. *Pollinia* 4, cereacea, per paria globosa, arcte connata, caudiculæ late lineari adnata.—Herba *epiphytica*; radicibus *tortis, filiformibus, elongatis*; caule *brevissimo*; foliis 3–5, *distichis, falcatis, lineari-lanceolatis, acuminatis, basi articulatis*; scapo *breviusculo*; floribus *flavis, racemosis, patentibus, longiuscule pedicellatis*.

Gunnia is one of the most southern of the Epiphytic *Orchideæ*, and is unknown in Australia, where epiphytes have hitherto been found only to the northward of Port Jackson or Illawarra. It is closely allied to the genus

Sarcochilus of Australia and New Zealand.—*Gunnia australis*, the only known species, is a small Epiphyte, almost stemless, with numerous tufted, very long, flattened, tortuous, filiform roots, often a foot long, that spread along the decayed twigs of the shrubs in which it grows, or are pendulous in the air.—*Leaves* three to five, coriaceous, linear-lanceolate, acuminate, falcate, 2–4 inches long, with numerous parallel veins, jointed on to the stem. *Raceme* about as long as the leaves, six- to ten-flowered. *Flowers* yellow, spreading, pedicelled, about ½ inch broad, very sweet-scented, like honeysuckle. *Sepals* oblong-lanceolate; the dorsal erect; lateral connate with the long claw of the labellum, spreading. *Petals* lanceolate, free, ascending. *Labellum* with a long, prominent unguis, bearing at its apex a small, tuberculate disc, which expands into a three-lobed lamina, formed of two incurving, broad-oblong, lateral lobes, and a smaller, oblong, emarginate middle lobe. *Column* very short. *Anther* terminal, hemispherical, two-celled. *Pollen-masses* appearing to be only two, and globose, but each formed of a closely combined pair, attached to a strap-shaped caudicle, which unites them to the top of the stigma. (Named in honour of *R. C. Gunn, Esq., F.R.S.*, of Tasmania.)

1. **Gunnia australis** (Lindl. in Bot. Reg. n. 1699). (*Gunn*, 436.) (Tab. CXXVIII.)

Hab. On the trunks and branches of bushes and small trees in dense forests at Emu Bay, Black River, Circular Head, Great Swan Port, etc., *Backhouse*, *Milligan*, *Gunn*.—(Fl. March.)

Plate CXXVIII. Fig. 1, flower; 2, column, anther, and pollen; 3, the same, with anther and pollen removed; 4 and 5, upper and lower side of anther-case; 6, pollen; 7, transverse section of ovary:—*all magnified*.

Nat. Ord. II. IRIDEÆ.

Upwards of thirty *Irideæ* have been discovered in extratropical Australia, of which only one or two advance northward into the tropic. They belong to three genera, of which one only, *Libertia*, is extra-Australian, being found in New Zealand and Chili. By far the greater number of species are inhabitants of South-western Australia, and only one or two are common to that and the south-eastern quarter.

Gen. I. PATERSONIA, *Br.*

Perianthium petaloideum, regulare, hypocrateriforme, tubo gracili; limbi sexpartiti laciniis interioribus minutis. *Stamina* 3, filamentis connatis. *Stylus* capillaceus. *Stigmata* 3, lamellata, indivisa. *Capsula* polysperma, spathis tecta.—Herbæ *perennes;* radice *fibrosa;* caule *subnullo;* foliis *equitantibus, ensiformibus;* scapo *simplici, ebracteato;* spatha *exteriore bivalvi, spathas partiales unifloras confertas includente;* floribus *sensim erumpentibus, fugacibus, cæruleis, immaculatis;* seminibus *sæpius angulis internis loculi, nunc columnæ centrali, affixis.*

The plants of this genus, of which about twenty-four are known, are for the most part very beautiful, but owing to the exceedingly fugacious corolla, are difficult of preservation in a good state for after examination. *P. glauca*, the only common Tasmanian species, is a perfectly glabrous, rigid herb, 1–1½ foot high, with fibrous roots, very short rhizome, and equitant, linear, sword-shaped, rigid, pungent leaves, 6–18 inches long and ⅛–¼ broad, slightly convex on both surfaces, and roughish at the margin, enclosed in sheathing, brown scales at the base. *Scape* very much shorter than the leaves, 1–3 inches long. *Outer spathe* of two equal, lanceolate, glabrous leaves, 1 inch long, containing several, much narrower, scarious, shining, red-brown bracts, of equal length, each of which encloses a flower. *Perianth* with a very slender tube, and six-lobed, regular limb, of which the alternate lobes are very minute, pale blue; larger lobes rounded-obovate. *Style* erect, short, with three broad, spreading, foliaceous, stigmatic lobes. *Capsule* prismatic, linear, shorter than the spathe, three-valved; valves leaving a slender, erect, central column, to which the seeds are attached. *Seeds* linear-ovoid, dark red-brown, shining, polished, with a conspicuous white funiculus.—Gunn considers that there are two Tasmanian species, but the shrivelled state of the corolla of his specimens prevents me from determining this point. (Named in honour of *Colonel William Paterson*, a sedulous investigator of New South Wales botany.)

1. **Patersonia glauca** (Br. Prodr. 304); glaberrima, foliis anguste linearibus rigidis pungentibus utrinque leviter convexis, scapo gracili foliis multoties breviore, spathis 3-floris lanceolatis glaberrimis, perianthii laciniis obovato-rotundatis, stylo erecto brevi.—*Endl. Icon. t.* 50; *Bot. Mag. t.* 2677. Genoseris fragilis, *Lab. Nov. Holl.* i. 13. *t.* ix. (*Gunn,* 762, 1379, 1380, 1381: *an duæ species confusæ?*)

Hab. Abundant in wet, peaty soil, in the northern parts of the Island, *Brown, Gunn, etc.*—(Fl. Dec., Jan.)

Distrib. New South Wales and Victoria.

Gen. II. DIPLARRHENA, *Br.*

Perianthium petaloideum, sexpartitum; laciniis interioribus minoribus; superiore dissimili fornicata. *Stamina* 2, fertilia sub superiore laciniarum interiorum conniventia; tertium castratum. *Stigma* bilabiatum, 3-partitum. *Capsula* oblonga, trigona.—Herba *perennis, glaberrima;* radice *fibrosa;* caule *brevi, foliato;* foliis *ensiformibus;* scapo *vaginato;* spatha communi *bivalvi, foliaceo, bracteas unifloras confertas includente;* floribus *pedicellatis, albis;* laciniis *perianthii interioribus pictis.*

I have only seen Tasmanian specimens of this beautiful plant, of which one species is so extremely common as to cover many acres with its white blossoms; its comparative rarity in the continent of Australia is hence remarkable.—*Rhizome* very short. *Leaves* radical and alternate on the stem or scape, narrow-linear, perfectly glabrous, striate, rigid, but not so much so as those of *Patersonia*, 1–2 feet long, acuminate, smooth and flat on both surfaces, $\frac{1}{4}$–$\frac{1}{3}$ inch broad. *Scape* erect, compressed, generally longer than the radical leaves, often flexuous, sometimes branched, bearing several sheathing bracts, and one to three spathes. *Spathes* of two lanceolate leaves 1$\frac{1}{2}$–2 inches long, containing several flowers, enclosed in scarious bracteoles. *Ovary* very long. *Perianth* without a tube, white, 1$\frac{1}{2}$–2 inches broad, of six obovate-oblong, spreading, membranous lobes, of which the three inner are smaller, and one is arched. *Stamens* three, two fertile, conniving, the third with an imperfect anther. *Stigma* three-lobed. *Capsule* exserted beyond the sheath, oblong, three-angled; *cells* with one row of densely packed, vertically flattened, opaque seeds. (Name from διπλος, *double*, and αρρην, *male;* in allusion to the two perfect stamina.)

1. **Diplarrhena Moræa** (Br. Prodr. 304). (*Gunn,* 955.)

Var. *β. alpina;* foliis brevioribus latioribusque. (*Gunn,* 1378.)

Hab. Abundant in good soil throughout the Island.—Var. *β.* in alpine situations, elev. 4000 feet, *Gunn.*—(Fl. Oct., Nov.) (*v. v.*)

Distrib. Victoria.

Gen. III. LIBERTIA, *Spr.*

Perianthium 6-partitum, regulare; foliolis subæqualibus v. interioribus majoribus, basi angustatis. *Stamina* 3, omnia fertilia. *Stigmata* 3, filiformia. *Capsula* clavata v. globosa, 3-locularis, loculicide 3-valvis. *Semina* biseriata, angulata.—Herbæ *glabræ;* radice *fibrosa;* foliis *gramineis, equitantibus;* caule v. scapo *teretiusculo;* inflorescentia *subpaniculata;* pedicellis *subumbellatis;* spathis *persistentibus, alternis subverticillatis v. involucratis;* floribus *albis.*

There are about six Australian species of this genus known, chiefly natives of the south-west quarter; others are found in New Zealand and South Chili.—*Herbs,* with equitant, striated, linear, grassy, rarely rigid leaves, and paniculate inflorescence, the peduncles of which are fasciculate, and enclosed in opposite or whorled, spathaceous bracts, hence often appearing umbellate. *Perianth* regular, white, six-lobed. *Stamens* three; *filaments* connate or free. *Stigmas* three, filiform. *Capsule* coriaceous, turgid, three-celled; *cells* with two rows of dark, angled seeds. (Named in honour of *Madame Libert*, author of a work on *Hepaticæ*.)

1. **Libertia Laurencei** (Hook. fil.); rhizomate gracili, foliis patentibus marginibus ciliolatis, inflo-

rescentia subumbellata, spathis fasciculorum subverticillatis, pedicellis filiformibus puberulis, perianthii foliolis obovato-oblongis, filamentis basi vix connatis. (*Gunn*, 270.) (TAB. CXXIX.)

HAB. Dense woods, abundant in various parts of the Island, ascending to 4000 feet; Western Mountains, *Laurence;* Acheron River, Hampshire Hills, etc., *Gunn.*—(Fl. Nov.)

A very elegant, white-flowered, little plant, forming large patches in shaded forests.—*Rhizome* slender, 1 inch long, giving off slender root-fibres. *Leaves* 3–6 inches long, $\frac{1}{4}$–$\frac{1}{3}$ inch broad, with minutely ciliated margins. *Scapes* slender, longer than the leaves, once or twice divided near the top. *Pedicels* filiform, in fascicles, subtended by one or several lanceolate spathes, which approach, and form a whorl or involucre. *Flowers* about $\frac{1}{3}$ inch broad. *Capsules* globose, size of a small pea.—PLATE CXXIX. Fig. 1, flower; 2, stamen; 3, ovary and stigma; 4, transverse section of ovary; 5, capsule; 6, transverse section of ditto; 7, seed; 8, ditto, cut longitudinally:—*all magnified.*

NAT. ORD. III. HÆMODORACEÆ.

The plants of this Order are for the most part natives of the southern hemisphere, and especially of Brazil, South Africa, and Australia. Those that are natives of the latter locality are almost exclusively found in South-western Australia, whence nearly fifty species have been brought; there are also three or four New South Wales species, all belonging to the genus *Hæmodorum,* which is both a tropical one and a native of Tasmania. The Order is allied to *Melanthaceæ* and *Irideæ,* differing from the former in its introrse anthers, entire stigma, and usually inferior ovary, and from the latter in the stamens, when only three, being opposite the inner lobes of the perianth.

Gen. I. HÆMODORUM, *Sm.*

Perianthium superum v. semisuperum, 6-partitum, persistens, glabrum. *Stamina* 3. *Ovarium* 3-loculare, loculis 2-ovulatis; stylo filiformi; stigmate simplici. *Capsula* semisupera v. supera, 3-loba, loculicide 3-valvis. *Semina* 2, peltata, compressa; *testa* membranacea; *umbilico* ventrali; *albumine* carnoso; *embryone* minimo.—Herbæ *glabræ;* radicibus *e fibris incrassatis tuberibusve coccineis elongatis fasciculatis;* caulibus *foliatis;* foliis *equitantibus, aversis, planis compressisve;* floribus *corymbosis, rarius spicatis.*

Upwards of twelve species of *Hæmodorum* are known, all natives of Australia, and, with the exception of two or three, of the south-western quarter. The Tasmanian *H. distichophyllum* is a small, tufted, rigid herb, with distichous, equitant, compressed leaves, 2–3 inches long, and a stout central scape about the same length, covered with large, concave, loosely sheathing, coriaceous bracts, and bearing a small, compact head of corymbose flowers.—*Perianth* $\frac{1}{3}$ inch across, of six nearly equal, spreading, obovate-oblong leaflets. *Stamens* three, with slender, erect filaments, and small, introrse anthers. *Ovary* half-superior, three-lobed, three-celled; *cells* with two ovules in each. *Style* slender, erect, undivided, with a simple, inconspicuous stigma. *Capsule* almost wholly superior, three-lobed, coriaceous, splitting down the back of each lobe. *Seeds* two, compressed. (Name from αἷμα, *blood,* and δῶρον, *a gift.*)

1. **Hæmodorum distichophyllum** (Hook. Ic. Plant. t. 854); humilis, foliis distichis equitantibus e basi longe vaginante lineari-subulatis compressis coriaceis, scapo brevi robusto bracteato, bracteis coriaceis laxis concavis, floribus capitatis, foliolis perianthii interioribus paulo minoribus basi staminiferis, staminibus exsertis. (*Gunn*, 2055.)

HAB. Heathy hills near Macquarrie Harbour, *Milligan.*—(Fl. Nov.)

NAT. ORD. IV. HYPOXIDEÆ.

A small Order, whose species are natives of South Africa and Australia chiefly, though several are found in India, the Malay Islands, and other parts of the world.

Gen. I. HYPOXIS, *L.*

Perianthium superum, 6-partitum, patens, æquale, persistens. *Stamina* 6; filamentis brevibus disco epigyno insertis; antheris introrsis. *Ovarium* 3-loculare; loculis multi-ovulatis; ovulis 2-seriatis, amphitropis. *Stigmata* 3, angulis styli erecti adnata v. libera. *Capsula* 1–3-locularis, evalvis. *Semina* plurima; *testa* coriacea; *umbilico* laterali rostelliformi; *albumine* molli, carnoso; *embryone* recto, axili; *radicula* supera, hilo remota.—Herba *radice tuberosa, tunicata*; foliis *planis linearibusve*; scapo *bracteato*, 1-*plurifloro*; floribus *sæpissime flavis.*

Of this genus, which abounds in South Africa, only four or five Australian species are known. All are small herbs, with narrow, grassy, or filiform leaves, coated tubers, and slender, one- or several-flowered scapes. *Flowers* yellow, erect. *Perianth* superior, of six equal, spreading pieces. *Stamens* six, inserted on an epigynous disc or thickened base of the perianth; *filaments* short; *anthers* introrse. *Style* erect, with three adnate or free stigmas. *Ovary* inferior, three-celled; *cells* with many ovules in two rows. *Fruit* indehiscent, three-celled, or with the dissepiments sometimes obliterated, coriaceous or membranous, crowned with the withered perianth. *Seeds* with a small, subulate point or hook at the umbilicus. (Name from ὑπω, *beneath*, and οξυς, *sharp*; in allusion to the elongate base of the capsule.)

1. **Hypoxis hygrometrica** (Lab. Nov. Holl. i. 82. t. 108); pilosa, foliis anguste linearibus filiformibusve scapo gracili 1–2-floro longioribus, floribus majusculis, filamentis elongatis, antheris basi longe bifidis, stigmate simplici parvo.—*Br. Prodr.* 289. (*Gunn*, 561.)

HAB. Abundant in marshy and grassy pastures, etc., throughout the Island, ascending to 4000 feet.—(Fl. Nov.–April.) (*v. v.*)

DISTRIB. Throughout extratropical Australia.

Whole plant more or less pilose, 2–8 inches long. *Leaves* very slender, almost filiform, longer than the one- or two-flowered, slender scape. *Flowers* $\frac{1}{3}$–$\frac{2}{3}$ inch broad, bright yellow. *Stamens* with the anther-cells free from the base upwards to the insertion of the filament, which is almost half their length. *Style* with small, clavate, adnate stigmata. *Capsules* turbinate.

2. **Hypoxis glabella** (Br. Prodr. 289); glaberrima, foliis filiformibus scapo gracili 1–2-floro longioribus, floribus majusculis, staminibus subæqualibus, antheris anguste linearibus integris, stylo brevi, stigmate late clavato integro v. trilobo.—*Lehm. in Plant. Preiss.* ii. 14. (*Gunn*, 163.) (TAB. CXXX. *A.*)

HAB. Abundant in pastures, etc.—(Fl. Aug.–Oct.) (*v. v.*)

DISTRIB. Victoria and South-west Australia.

Very similar in general appearance to *H. hygrometrica*, but glabrous, with paler flowers, and the stamens and style are very different. *Stamens* nearly equal. *Anthers* linear, entire at the base, on short filaments. *Stigma* large, clavate, on a stout, short style, entire or deeply lobed.—PLATE CXXX. *A.* Fig. 1, flower; 2, stamen; 3, style and stigma:—*all magnified.*

3. **Hypoxis pusilla** (Hook. fil.); glaberrima, foliis filiformibus flexuosis scapo brevi longioribus, floribus parvis, staminibus alternis minoribus, antheris ellipticis basi integris, stylo brevi, stigmatibus linearibus, capsula turgida. H. hygrometrica?, *Fl. N. Zeal.* i. 253. (*Gunn*, 761.) (TAB. CXXX. *B.*)

HAB. Circular Head, *Gunn.*—(Fl. May.)

DISTRIB. Victoria and South-west Australia, New Zealand.

A smaller species than either of the preceding.—*Bulb* as large as a hazel-nut. *Leaves* wiry, 2–3 inches long. *Scape* $\frac{1}{2}$–$1\frac{1}{2}$ inch high, one- rarely two-flowered. *Flower* $\frac{1}{4}$ inch broad.—PLATE CXXX. *B.* Fig. 1, flower; 2, outer segment of perianth and stamen; 3, inner ditto; 4, ovary, style, and stigma; 5, transverse section of ovary; 6, ripe fruit; 7, vertical section of ditto; 8, seed; 9, ditto, cut longitudinally:—*all magnified.*

Nat. Ord. V. HYDROCHARIDEÆ.

There are three Australian genera of this Order; one, *Damasonium*, contains a single species very closely allied to, if not identical with, an Egyptian and Indian plant; the second, *Hydrilla*, consists also of one species, which is found throughout the Old World, from East Prussia to South Africa and India; the third is the present, a very singular plant, the economy of whose fertilization is one of the most curious in the vegetable kingdom.

Gen. I. VALLISNERIA, *L.*

Flores dioici. Masc. *Spadix* brevissime pedunculatus, conicus, spatha trivalvi inclusus, floribus sessilibus minimis undique tectus. *Perianthium* tripartitum, lobis valvatis. *Staminodia* 4. *Stamina* 1–3, perianthii laciniis alterna, filamentis brevibus, antheris globosis. Fœm. *Flos* sessilis, spatha tubulosa inclusus, scapum longissimum spiraliter tortum terminans. *Perianthium* superum, 3-partitum. *Staminodia* 3, perigonii laciniis alterna. *Stigmata* 3, magna, ovalia, sæpius bifida, extus quandoque appendiculata. *Ovarium* 1-loculare, placentis 3 parietalibus. *Bacca* cylindrica, perigonii limbo coronata, polysperma. *Semina* cylindrica, ascendentia, testa coriacea, echinata; *embryone* exalbuminoso, orthotropo, extremitate radiculari infera.—Herbæ *submersæ, perennes, stoloniferæ*; foliis *linearibus, elongatis, submembranaceis, clathratim venosis, apice serrulatis*; floribus *parvis, masculis fere microscopicis.*

1. **Vallisneria spiralis** (Linn. Sp. Pl. 1441); foliis linearibus obtusis apice serrulatis.—*Br. Prodr.* 345.

Hab. South Esk River, in deep and shallow water, and probably common elsewhere, *Gunn.*

Distrib. Australia, and generally diffused in the warm-temperate and tropical parts of the world.

Vallisneria spiralis is a submerged fresh-water herb, with fibrous roots, a very short stem, sending off lateral suckers, and very long, flat, linear, green leaves, serrulate at the tips. The male and female flowers are on different plants. The male inflorescence (of which I have seen no Tasmanian specimens) is an almost sessile spathe, containing a small, short spadix, covered with little globose, sessile, white, almost microscopic flowers; these become detached from the spadix, ascend to the surface of the water, expand by three valvate segments, and expose one to three minute stamens, alternating with some staminodia. The female flower is solitary at the apex of a very long, spirally-twisted filiform peduncle, which, by unrolling its spire, allows the flower to reach the surface of the water, and there expand. The female flower consists of a cylindrical ovary, crowned by three small, spreading perianth-lobes, has three staminodia, and three large sessile stigmata. The pollen, detached from the floating male flowers, fertilizes the female, after which the spiral peduncle again contracts, and the female is carried to the bottom of the water, where it ripens its fruit.—*Fruit* a cylindrical berry, ½–2 inches long, with many ascending, ridged, and toothed seeds, attached to parietal placentæ. (Named in honour of *Antonio Vallisneri*, an Italian botanist.)

Nat. Ord. VI. PISTIACEÆ.

A very small Order, containing a few genera of water-plants, closely allied to *Aroideæ*, of which they are no doubt very reduced forms. The tropical Duckweed, *Pistia*, which abounds in the fresh waters of the Old and New Worlds, has not hitherto been found in Australia.

Gen. I. LEMNA, *L.*

Flores hermaphroditi v. abortu dioici, fissura frondis lenticularis cellulosæ inserti, spatha membranacea inclusi. *Stamina* 1–2, exserta; filamentis inæquilongis; antheris didymis. *Ovarium* sessile, 1-loculare; *ovulis* 1–4, basilaribus, stylo brevi; *stigmate* truncato. *Utriculus* membranaceus, 1–4-spermus.

Semina erecta v. horizontalia; *testa* membranacea. *Embryo* exalbuminosus, orthotropus v. semi-antitropus; *cotyledone* crassa, farinacea, inferne excavata, radiculam includens, infra centrum plumulam minimam involvens, tubo membranaceo globulis repleto percursa.—Herbæ *minimæ;* frondibus *lenticularibus, aquis dulcibus natantibus, marginibus proliferis;* radiculis *simplicibus, calyptra majuscula terminatis.*

A genus of very curious minute water-plants, found all over the temperate and tropical parts of the globe, familiar as "Duckweed," covering the surface of stagnant fresh-water with a pale bright-green stratum.—*Fronds* scale-like, proliferous at the margin, furnished with tufts of thread-like, solitary, or tufted roots that have thickened extremities. *Flowers* very minute, and seldom produced, included in slits of the frond, enclosed in a membranous spathe that bursts irregularly. *Stamens* two, exserted, unequal, with two-lobed anthers.—The flowers, which are, when present, detected with difficulty, from their excessive minuteness, may best be found by examining the yellowish patches of the floating stratum. (Name, the old Greek one.)

1. **Lemna minor** (Linn. Sp. Pl. 1376); frondibus ovalibus utrinque planis, radicibus solitariis.—*Br. Prodr.* 345; *Fl. N. Zeal.* i. 239. (*Gunn,* 1015.)

HAB. Still waters, abundant.—(*v. v.*)

DISTRIB. Australia, New Zealand, throughout Europe, Asia, North and South Africa, America, and the Pacific Islands.

Fronds nearly ovate, compressed, 1–2 lines long, rather thick and succulent in texture, very slightly convex below. *Roots* solitary, *Utriculus* one-seeded.—"Lesser Duckweed" of England.

2. **Lemna trisulca** (Linn. Sp. Pl. 1376); frondibus lanceolatis petiolatis cruciatim cohærentibus, radicibus solitariis.—*Br. Prodr.* 345. (*Gunn,* 1014.)

HAB. Still waters; less frequent than *L. minor, Brown, Gunn, etc.*—(*v. v.*)

DISTRIB. Australia, Europe, and various temperate and tropical countries.

The "Ivy-leaved Duckweed" of England.—*Fronds* $\frac{1}{4}$–$\frac{3}{4}$ inch long, thin, elliptic-lanceolate, with one extremity prolonged, the other serrate, pellucid at the margin. *Roots* solitary. *Seed* solitary, transverse, with a short funiculus.

NAT. ORD. VII. TYPHACEÆ.

The small Order to which *Typha* belongs, may, along with *Pistiaceæ,* be reduced to a section of *Aroideæ.* The only genera belonging to it, *Typha* and *Sparganium,* are both Australian, though the former only has hitherto been found in Tasmania.

Gen. I. TYPHA, *L.*

Flores amentacei. *Amenta* cylindrica, mascula et fœminea eundem culmum vestientia, masculo superiore. *Flores* densissime congesti, papposi:—MASC. *Perianthium* 3-setosum, staminibus 3–6, filamentis filiformibus liberis v. varie monadelphis, antheris basifixis;—FŒM. *Ovarium* 1-loculare, longe stipitatum, in stylum elongatum gracilem, apice lateraliter stigmatosum angustatum, stipite setis capillaribus (perianthio) plumoso; *ovulo* unico, pendulo, anatropo. *Utriculus* evalvis, monospermus. *Semen* pendulum; testa membranaceo, albumine farinaceo, embryone axili, radicula hilo proxima, plumula fissura laterali inserta.—Herbæ; rhizomate *repente, fibras crassas emittente;* foliis *ensiformibus, subspongiosis, integerrimis;* culmis *inarticulatis, cylindraceis.*

This genus contains the common English Reed-mace, or "Cat's-tail," and is found in most parts of the globe on the margins of fresh-water ponds, etc., where it is conspicuous for the cylindrical, bright-brown catkins of pappose flowers. These yield an immense quantity of pollen, which is pressed into the form of cakes, and eaten in

times of scarcity by the natives of Australia, New Zealand, and Scinde in Western India. The leaves are used for thatching and other purposes. *Rhizomes* full of starch, often eatable. The species are not well characterized; the Tasmanian one seems to be the same as the English, though larger than the common European state of the same plant.—*Rhizomes* stout, creeping, densely matted together. *Culms* 2–4 feet nigh, cylindrical, solid. *Leaves* linear, spongy internally, sheathing at the base, quite entire. *Catkins* two, towards the apex of each culm, the upper of male flowers removed a little distance from the lower. *Flowers* minute, most densely matted together, so that the catkins look like velvet pile. *Perianth* of capillary setæ; male of three to six stamens, with slender filaments: female of a slender one-celled ovary, terminating in a taper persistent style. (Name, the old Greek one.)

1. **Typha angustifolia** (Linn. Sp. Pl. 1377); foliis dorso convexis, amenta mascula a fœminea distincta.—*Br. Prodr.* 338; *Fl. N. Zeal.* i. 238. ? T. Shuttleworthii, *Sonder et Koch in Koch Synops. Fl. Germ. ed.* 2. ii. 785; *Lehman in Plant. Preiss.* ii. 3. (*Gunn,* 412.)

Hab. Common in marshes, banks of rivers, etc.—(*v. v.*)

Distrib. Australia, New Zealand, and in many temperate and some tropical parts of the Old and New World.

Nat. Ord. VIII. ALISMACEÆ.

A large Order of water-plants, whose limits are much disputed; and it seems to be immaterial whether *Alismaceæ, Juncagineæ,* and *Naiadeæ* are considered separate Orders, or sections of one. A far more perfect transition of forms exists between the most perfect *Alismaceæ* and the most imperfect *Naiadeæ*, than between *Aroideæ, Pistiaceæ,* and *Typhaceæ,* which are somewhat similarly connected. All are water or marsh plants, with solitary or free, superior, one-celled, one-seeded, rarely two- or many-seeded, indehiscent carpels, bearing one or more erect or pendulous, exalbuminous seeds, with straight or curved embryos. The floral envelopes are in two series in *Alisma,* consisting of three green sepals, and as many white membranous petals; but the transition is perfectly gradual from this perfect double perianth to the naked stamens and ovary of *Ruppia* and others. The European genera *Alisma* and *Actinocarpus* are both Australian, but not hitherto found in Tasmania.

Gen. I. TRIGLOCHIN, *L.*

Flores hermaphroditi. *Perianthium* 6-phyllum, foliolis imbricatis ovato-concavis, 3 interioribus interdum altius insertis, v. 0. *Stamina* 3–6; filamentis brevissimis, antheris extrorsis. *Ovarium* 3–6-loculare, loculis ovulo 1 (rarius 2?) erecto; stylis 3–6, stigmatibus sessilibus papillosis v. plumosis. *Capsula* e carpidiis 3–6 axi adnatis, alternis interdum sterilibus septiformibus. *Semina* solitaria, testa coriacea; *embryone* exalbuminoso orthotropo.—Herbæ *paludosæ, scapigeræ;* foliis *linearibus;* scapis *gracilibus;* floribus *viridibus, spicatis racemosisve, inconspicuis.*

Minute or tall slender marsh-herbs, with narrow, grass-like, or subulate leaves and scapes, bearing spikes or racemes of inconspicuous green flowers, natives of all temperate regions, more numerous and curious in Australia, where about ten species are known, than in any other country.—*Perianth* of four to six greenish, generally unequal (the outer and lower larger), fleshy, concave leaflets, in two series, the upper generally placed at a little distance above the others. *Stamens* three to six, with very short filaments, and broad, extrorse anthers, often as large as the sepals in which they lie. *Ovaries* three to six, turgid or linear, combined into a three- to six-celled ovary, with as many one- to two?-ovuled cells, and sessile plumose stigmas. *Fruit* of three to six carpels, attached to a central axis, each ovate, cylindrical, or linear, sometimes keeled, grooved, or armed with a projecting spine below. *Seed* solitary, erect, exalbuminous, with a coriaceous testa and straight embryo. (Name from τρεις, *three*, and γλωχις, *a point;* in allusion to the three carpels.)

1. **Triglochin triandrum** (Mich. Flor. Bor. Am. i. 208); foliis gramineis, floribus pedicellatis, staminibus 3–6, fructu subgloboso, carpellis 3 dorso carinatis cum 2–3 septiformibus alternantibus, stigmatibus brevibus recurvis.—*Fl. N. Zeal.* i. 236. T. decipiens, *Br. Prodr.* 343; *Endl. in Plant. Preiss.* ii. 53. T. filifolium, *Sieb. Pl. Exsic.; Hook. Ic. Pl.* 579.

Hab. Salt-marshes; abundant, *Brown, Lawrence, Gunn, etc.*—(Fl. Nov.–Jan.) (*v. v.*)

Distrib. Australia, from Moreton Island southwards and Swan River; New Zealand, Cape of Good Hope; South America, from South Brazil on the east coast, and Chili on the west, southwards; South United States.

A slender plant, 3 inches to 2 feet high.—*Root* swollen and bulbous. *Leaves* narrow, linear, sharp-pointed, as long as or shorter than the scape, with membranous sheaths. *Scape* solitary, flowering part 1–5 inches long. *Flowers* very numerous, minute, on spreading pedicels that lengthen after flowering. *Sepals* ovate, acute or blunt, variable in size and form. *Stamens* variable in number, and particularly in size. *Fruit* broadly-ovate or elliptic, one line long, of three compressed carpels, alternating with as many flat abortive ones. *Carpels* with three ridges at the back, and very sharp points.—The Tasmanian specimens have sharper sepals than is usual, and the stamens are more frequently six.

2. **Triglochin centrocarpum** (Hook. Ic. Pl. t. 728); pusillum, cæspitosum, foliis filiformibus scapo brevioribus, scapis plurimis, floribus breve pedicellatis, sepalis membranaceis valde inæqualibus acuminatis obtusisve, staminibus 3–5, fructu lineari apice truncato, carpellis 3 fertilibus 3 sterilibus alternantibus linearibus dorso planis tricostatis, costis lateralibus marginalibus basi breviter calcaratis, stigmatibus parvis recurvis.—*Endl. in Plant. Preiss.* ii. 54. (*Gunn*, 761.)

Var. *β*; fructibus brevioribus brevissime pedicellatis divaricatis. (*Gunn*, 899.)

Hab. Sandy, moist places; abundant, *Gunn*. Var. *β*. Georgetown, *Gunn*.

Distrib. Victoria and Swan River.

An insignificant plant, 1–2 inches high.—*Leaves* ½–1 inch long, filiform, narrow, blunt. *Scapes* numerous, rigid and wiry when in fruit, bearing a spike of five to ten minute flowers. *Fruit* on very short pedicels, linear, ⅓–¼ inch long, three-angled or six-angled, the alternate faces much smaller, and formed by the alternate sterile carpels. *Carpels* very narrow, blunt, with a small, recurved, feathery stigma; back flat, with three ridges; the two lateral marginal produced at base each into a short projecting spine.—Swan River specimens are sometimes twice a slarge as these, with much longer pedicels to the fruit, but the majority do not differ from Tasmanian. The var. *β* looks a somewhat different plant because of its small, sessile, spreading (not erect) fruit, but I find the same size of fruit on long pedicels in Swan River specimens, and both erect and spreading.

3. **Triglochin procerum** (Br. Prodr. 343); robustum, elatum, radice tuberibus plurimis, foliis gramineis linearibus obtusis sæpius supra medium natantibus, scapo solitario, spica elongata, floribus breve pedicellatis, sepalis obtusis, staminibus 6, ovariis 6 fertilibus, stigmatibus linearis recurvis papillosis, carpellis 6 sæpius obliquis tortisve apicibus divaricatis.—Cycnogeton Hügelii, *Endl. in Ann. Vien. Mus.* ii. 210; *Plant. Preiss.* ii. 55; *Icon. t.* 73; *Gen. Pl. Suppl. p.* 1369.

Var. *β*. minor, gracilior, foliis anguste linearibus spica abbreviata.

Hab. Fresh and brackish water; abundant. Var. *β*. In pools dried in summer.—(Fl. Nov.) (*v. v.*)

Distrib. Tropical New Holland, Port Jackson, Swan River, and Victoria.

An extremely variable plant, as Mr. Gunn well remarks, from 1 to 3 feet high, and robust in proportion. The var. *β* is smaller and more slender, growing in sandy pools dried up in summer.—*Roots* of many fibres, bearing numerous oval tubers ½–1 inch long. *Leaves* 6 inches to 3 feet long, and ¼–2 inches broad, compressed below, flat above, linear, blunt, the upper part floating on the water. *Scapes* solitary, very variable in thickness and length, some as thick as the thumb, others as a crow-quill. *Spikes* long or short, of many, sessile, crowded flowers,

that separate and become pedicelled as fruit is matured. *Sepals* six, broad, rounded. *Stamens* six. *Ovaries* six, with recurved, rough stigmas. *Carpels* six, obliquely linear or ovate, with spreading, curved points, straight or twisted, $\frac{1}{3}$–$\frac{1}{2}$ inch long.—Endlicher separates this from the genus and Natural Order of *Triglochin*, on account of the valvate perianth, two ovules, and embryo with a large cotyledon, in all which characters, and particularly in the partially floating leaves, it approaches *Potamogeton;* but not only is the whole habit and appearance that of *Triglochin* (in which Mr. Brown places it), but I find the æstivation partially imbricated (as much as in some *Triglochins*), only one ovule in all the specimens I have examined, and the form of the embryo varies with that of the carpels in the different species of the genus.

Gen. II. POTAMOGETON, *L.*

Flores hermaphroditi. *Sepala* 4, valvata. *Stamina* 4, antheris extrorsis. *Ovaria* 4, sessilia, unilocularia; ovulo 1, ascendente, infra apicem loculi affixo; stigmate sessili, obliquo. *Carpella* 4, coriacea v. nucumentacea. *Semen* curvatum, exalbuminosum; testa tenui; radicula incrassata, infera.—Herbæ *aquaticæ;* caulibus *repentibus, demersis;* foliis *alternis, rarius oppositis, polymorphis;* stipulis? *intrafoliaceis;* spicis *pedunculatis, axillaribus, basi vaginatis.*

Fresh-water herbs, with leaves often of two forms, the lower linear, grass-like, green, and submerged, the upper brown and floating, and short, axillary, or terminal spikes of inconspicuous green flowers that project above water. In shallow places the lower leaves are often undeveloped; in deeper the upper floating ones are sometimes fewer in proportion. The depth of water and its rapidity, if flowing, cause great variation in their form, number, and size. The species are numerous, and many are found in all temperate and even tropical parts of the world. —*Flowers* few or many, sessile on short or long fleshy peduncles. *Perianth* of four nearly sessile concave sepals, valvate in æstivation. *Stamens* four, sessile, opposite the sepals; *anthers* two-celled. *Ovaries* four, sessile, one-celled, with one curved ascending ovule attached to the axis above the middle. *Stigma* sessile near the apex. *Carpels* four, coriaceous or bony. *Seed* exalbuminous; *testa* membranous; *radicle* thick, pointing downwards. (Name from *ποταμος, a river*, and *γειτων, a neighbour.*)

1. **Potamogeton natans** (Linn. Sp. Pl. 182); foliis natantibus petiolatis ellipticis oblongis oblongo-rotundatisve basi subcordatis rotundatis subacutisve, submersis linearibus membranaceis v. nullis, stipulis liberis, nucibus dorso carinatis.—*Br. Prodr.* 343; *Fl. N. Zeal.* i. 236. (*Gunn*, 748.)

Var. *β. minor;* foliis minoribus elliptico-lanceolatis.

Hab. Ponds and still rivers, abundant, *Brown, etc.*—(*v. v.*) Var. *β.* Lake River, Grindelwald, *Gunn.*

Distrib. Over most parts of the world, from the Arctic Circle to the Cape of Good Hope, South Chili, New Zealand, and Australia; also found in the Pacific Islands.

A common and very variable plant, often covering the surface of the water with its red-brown foliage.—*Leaves* floating, 1–3 inches long, stalked, elliptical or oblong, more or less broad and sharp at both ends, or blunt or cordate at the base; submerged leaves none, or linear, green, membranous. *Spike* 1–2 inches long. *Nuts* keeled at the back.—The var. *β* resembles the European *P. heterophyllus*, and has smaller, sharper leaves, partly owing to its growing in running water, and partly to the elevation of its habitat (1500 feet). I have not seen its fruit.

2. **Potamogeton heterophyllus** (Schreb. Spic. Fl. Lips. 21?); foliis natantibus petiolatis oblongis ellipticis elliptico-lanceolatisve, submersis membranaceis sessilibus v. breve petiolatis lanceolatis utrinque angustatis integerrimis crispatis denticulatisve, stipulis nervosis, pedunculis superne incrassatis.—*Engl. Bot. t.* 1285.

Hab. Derwent River, above New Norfolk, *Gunn.*—(*v. v.*)

Distrib. Europe, India, and probably many other places.

My specimens are not satisfactory, having only young flowers, and few floating leaves; it may prove to be a variety of *P. natans*. This character I have adopted from the British Flora, the Tasmanian plant agreeing with it, and with European specimens.—*Floating leaves* like those of *P. natans*, but narrower and more membranous; submerged ones numerous, narrow lanceolate, stalked, membranous, entire, toothed, or crisped. *Peduncle* short, thickened upwards.—Some Tasmanian specimens have rigid, wiry stems, and all the leaves lanceolate, opaque, and coriaceous. This is possibly *P. crispus* of Mr. Brown, from Port Jackson, who has added to the specific name "non Linn." in my copy of his 'Prodromus.' Koch refers *P. heterophyllus*, Schreb., to a variety of *gramineus*, which this plant may be.

3. **Potamogeton gramineus** (Linn. Sp. Pl. 184); foliis omnibus submersis linearibus obtusis membranaceis trinervibus, venis transversis paucis remotis, pedunculo brevi spica sæpius vix longiore.—*Br. Prodr.* 343; *Engl. Bot. t.* 2253.

Hab. South Esk River (growing with *P. natans*), *Gunn.*

Distrib. Europe, India, and various other parts of the world, as Australia and New Zealand.

A very different-looking and greener plant than the two former.—*Stems* elongated; branches long, simple. *Leaves* 2–4 inches long, ¼ inch broad, linear, blunt, with three parallel veins connected by a few distant transverse ones. *Peduncles* short, as are the spikes.

Gen. III. RUPPIA, *L.*

Flores hermaphroditi v. unisexuales, spicati, pauci. *Perianthium* 0. *Stamina* 2–4, interdum dissita; filamentis brevissimis, squamæformibus; antheris magnis, extrorsis, polline trihedro. *Ovaria* 4, sessilia, demum stipitata, 1-locularia; *ovulo* 1, pendulo; *stigmate* sessili, peltato. *Fructus* e carpellis 1-4 longe stipitatis indehiscentibus, gibbosis; *semen* pendulum, exalbuminosum, uncinatum, cruribus inæqualibus. *Embryo* homotropus, macropodus, cotyledone acuminata.—Herbæ *gracillimæ, cæspitosæ, aquam salsam habitantes;* ramis *filiformibus;* foliis *lineari-setaceis, filiformibus, basi vaginantibus.*

A very widely-distributed plant, forming matted masses of long, very narrow, slender, greenish-brown stems and foliage, in brackish water.—*Stems* very slender, 6 inches to several feet long. *Leaves* alternate, sheathing below, very long, narrow, and linear. *Flowers* in the axils of the leaves. *Spadix* much lengthened after flowering, and spirally twisted (as in *Vallisneria*). *Ovaries* sessile. *Peduncles* of the fruit much lengthened, often an inch long. *Nuts* very small, oblique, compressed, with sharp or blunt styles.—An extremely variable plant in Europe, of which several species have been made on insufficient grounds. (Named in honour of *Henry Barnard Ruppius*, an early German botanist.)

1. **Ruppia maritima** (Linn. Sp. Pl. 184).—*Fl. N. Zeal.* i. 236. (*Gunn*, 1359, 1359?.)

Hab. Fresh and brackish water near the sea; abundant in the Derwent, Tamar, etc.—(Fl. Oct.) (*v. v.*)

Distrib. Europe and North Africa, Red Sea, peninsula of India, and Ceylon, Australia, New Zealand, Sandwich Islands, east and west coasts of North America, West Indies.

Gen. IV. ZANNICHELLIA, *L.*

Flores monoici. Masc. *Stamen* 1, spatha inclusum, axillare, pedicellatum; anthera sessilis, late oblonga, 2-4-locularis; pollen globosum. Fœm. *Ovaria* sub-4, spatha inclusa, pedicellata, 1-locularia, 1-sperma; stylo recto; stigmate dilatato; ovulo 1, pendulo, orthotropo. *Nuculæ* 4, breve pedicellatæ v. sessiles. *Semen* pendulum, exalbuminosum; testa tenui; cotyledone elongata, circinatim inflexa; radicula macropoda.—Herbæ *natantes, tenellæ, aquæ dulcis.*

Very slender, floating herbs, inhabiting fresh-water. *Leaves* linear-elongate, 1–3 inches long, 1 line broad. *Flowers* monœcious, axillary, solitary, minute, hidden in the spathaceous axils of the leaves. MALE. A solitary, naked stamen, with short filament, and erect, quadrate, two- to four-celled anther. *Pollen* globose. FEMALE. Four ovaries in a spathe, sessile or pedicelled, with slender styles and peltate stigmas. *Fruit* of four linear-oblong, coriaceous, minute nuts, indehiscent, sometimes crenate at back, on long or short pedicels, furnished with long or short styles. *Seed* oblong, pendulous; *testa* membranous; *albumen* 0; *radicle* very large; *cotyledon* doubled inwards on the radicle. (Named in honour of *John Jerome Zannichelli*, a Venetian apothecary and botanist.)

1. **Zannichellia palustris** (Linn. Sp. Pl. 1375).—*Fl. N. Zeal.* i. 237. ? Z. Preissii, *Lehm. in Plant. Preiss.* ii. 3. (*Gunn*, 1564.)

HAB. Pools of fresh water, abundant: Hobarton, etc.—(*v. v.*)

DISTRIB. Australia, New Zealand, Europe, North Africa, as far south as the Canaries, North, Central, and West Asia, India, east and west coasts of North America, and the West Indies.

Gen. V. POSIDONIA, *König.*

Flores hermaphroditi, spadice v. pedunculo basi spatha foliacea bilabiata incluso. *Perianthium* 0. *Stamina* persistentia, sessilia; antheris 3–4, bilocularibus, loculis discretis; filamentis crasse coriaceis, viridibus, erectis, conico-elongatis, utrinque extus basi loculum polliniferum gerentibus; polline confervoideo. *Ovarium* 1-loculare; ovulo 1, parietali, amphitropo; stigmate sessili, villoso, lobato? *Fructus* subbaccatus, indehiscens. *Semen* longitudinaliter adnatum, exalbuminosum. *Embryo* macropodus; *radicula* maxima, infera; *cotyledone* inflexa, rima longitudinali inclusa.—Herbæ *marinæ;* caule *repente, ramoso, foliorum exuviis vestito;* foliis *ad apices ramorum congestis, lineari-elongatis, gramineis;* spadice *pedunculo crassiusculo e foliorum centro exserto.*

Dull-green plants, with creeping rhizomes, growing in salt-water.—*Rhizomes* short, shaggy with the fibrous remains of old leaves, and tufts of green, grassy leaves. The species are most common in tropical seas. *Peduncle* or *spadix* short, arising from the centre of a leaf, its base enclosed in a two-valved, leafy spathe. *Flowers* few, three to twelve (each surrounded by a secondary spathe?). *Perianth* 0. *Stamens* three or four. *Anthers* placed at the back (outer face) of a broad, persistent, coriaceous filament, that resembles a segment of a perianth. *Ovary* one-celled, with one ovule. *Fruit* a small, fleshy utriculus, with a sessile, plumose stigma. *Seed* exalbuminous, attached on one side by all its length to the walls of the pericarp; radicle very large, bent upwards at the apex? plumule lying in a slit of the cotyledon.—I have seen detached fruiting spikes of the Tasmanian species, in a very bad state; they were found by Gunn, washed up on the beach, and were supposed by him to belong to *Cymodocea*, but they so closely accord with the general characters of the European *P. oceanica*, that I conclude they belonged to *P. australis*. (Name from Ποσειδων, *the god Neptune.*)

1. **Posidonia australis** (n. sp.); caule breviusculo, ramis abbreviatis exuviis foliorum longissimis flexuosis dense vestitis, foliis longissime linearibus obtusis, ligula brevissima truncata, spica 4–6-flora.—Caulinia oceanica, *Br. Prodr.* 339, *non DC.* (*Gunn*, 1347.)

HAB. Coast of Tasmania, *Brown;* near Georgetown, below low-water mark, *Gunn.*

DISTRIB. South coast of Australia.

Stems short; *branches* densely covered with long, ragged, white fibres, 2–3 inches long, the remains of old leaves. *Leaves* 2–3 feet long, $\frac{1}{3}$ broad, rounded at the tip, nerveless, shining when dry. *Ligula* very short, decurrent, and forming inflexed margins to the base of the leaf.—I have not seen the flowers of this plant, of which Mr. Brown says there are four to six on the spike; he refers it to the *P. oceanica* of the Mediterranean Seas, which is much smaller, with a stiff white brush at the base of the leaves, instead of long, matted fibres. Mr. Brown further remarks that the four to six flowers of this may distinguish it.

Gen. VI. CYMODOCEA, *König.*

Flores dioici, in pedicello primum vagina folii incluso demum elongato solitarii. *Perianthium* 0. MASC. *Stamina* 2, sessilia, 2-locularia; polline confervoideo. FŒM. *Ovaria* 2, libera, 1-locularia, 1-ovulata; ovulo pendulo. *Stylus* filiformis; stigmatibus 2. *Capsulæ* 2, bivalves. *Semen* pendulum, exalbuminosum.—Herbæ *marinæ;* caule *sarmentoso,* ramis*que articulatis;* foliis *linearibus.*

I am very doubtful whether the *Ruppia antarctica* of Labillardière should be referred to this genus, having seen no flower or fruit, and the male flower alone being hitherto described by Gaudichaud. *C. antarctica* strongly resembles, in habit and general appearance, some Indian plants referred to *Thalassia*, as *T. Indica*, but the generic character of *Thalassia* attributes a three-leaved perianth to that genus, flowers enclosed in a peduncled spathe, and nine anthers to the male flower, characters wholly at variance with Gaudichaud's description of *Ruppia antarctica*. (Name from Κυμοδοκη, *a sea-nymph.*)

1. **Cymodocea antarctica** (Endl. Gen. 230; Plant. Preiss. ii. 273); caule elongato flexuoso ramoso, ramis elongatis teretibus v. compressis annulatis apice foliosis, foliis patulis amplexicaulibus linearibus late truncato-bidentatis, ligula brevissima truncata.—Posidonia antarctica, *Spreng. Syst. Veg.* i. 181. Caulinia? antarctica, *Br. Prodr.* 339. Ruppia antarctica, *Lab. Fl. Nov. Holl.* ii. 116. *t.* 264; *Gaud. in Frey. Voy. Bot.* 430. *t.* xl. *f.* 2. Graumullera, *Reich., fid. Endl. Gen.* Amphibolis zosterifolia, *Agardh, Syst. Alg.* 192. (*Gunn,* 1358.)

HAB. Rocks in the sea, Georgetown, *Gunn.*

DISTRIB. East, west, and south coasts of Australia.

Stems sparingly branched, 1–2 feet long, pale brown, cylindrical, jointed, joints swollen, as thick as a pigeon's quill. *Leaves* crowded at the end of the branches, alternate, amplexicaul, 1½–2 inches long, ⅓ inch broad, linear, with a broad shallow notch at the tip, dark-green, nerveless. *Ligula* very short, decurrent, forming inflexed margins to the base of the leaf (as in *Posidonia*).

Gen. VII. ZOSTERA, *L.*

Flores monoici v. dioici. *Spatha* foliacea, basi folii longitudinaliter adnata. *Spadix* membranaceus, inclusus, antice staminibus ovariisque biseriatis onustus. *Antheræ* solitariæ, sessiles, peltatæ, 1-loculares, polline confervoideo. *Ovaria* pauca, dorso prope apicem affixa, 1-locularia; ovulo 1, pendulo, orthotropo; stylo persistente, subulato; stigmatibus 2, capillaribus. *Utriculus* evalvis. *Semen* pendulum, exalbuminosum; *testa* membranacea, longitudinaliter striata; *embryone* macropoda, radicula infera, cotyledone inflexa, rima longitudinali inclusa.—Herbæ *marinæ;* caule *repente, radicante;* foliis *gramineis, basi vaginantibus.*

Slender, creeping, marine plants, called "Sea-wrack" in England, with grassy leaves, which are extremely variable in breadth and length. There is probably but one species (of the varieties of which many more have been made), which is found in all seas, but not hitherto found in flower or fruit in those of Australia and New Zealand.—*Spathe* adnate to the inner face of the base of the leaves. *Stamens* and *ovaries* inserted in two rows on the face of a flat thin, spadix. *Flowers* monœcious. *Perianth* 0. *Male flower* a sessile, one-celled anther, with confervoid pollen. *Female* an ovate ovary, with one long, filiform style and two stigmata, one cell and one ovule. *Fruit* a utriculus, bursting irregularly. *Seed* pendulous, without albumen, a large radicle and inflexed cotyledon lodged in a slit. (Name from ζωστηρ, *a ribbon;* in allusion to the form of the leaves.)

1. **Zostera marina?** (Linn. Sp. Pl. 1734).—*Br. Prodr.* 338. (*Gunn,* 1348.)

HAB. Abundant in the sea, especially in muddy estuaries, forming extensive green banks.—(*v. v.*)

DISTRIB. European and North-American shores, from Iceland southwards, the Mediterranean, Cape of Good Hope, Australia, and New Zealand.

Stems creeping; *branches* slender, erect, leafy. *Leaves* in Tasmanian specimens 6–12 inches long, 1–2 lines broad, with numerous, very faint nerves. *Flowers* and *fruit* unknown in Tasmania.

Gen. VIII. HALOPHILA, *Gaud., an Thouars?*

Flores dioici?, (interdum) monoici, axillares, solitarii, breve pedicellati. *Perianthium* spathaceum, diphyllum. Fl. masc. *Stamina* 3; *filamentis* connatis; *antheris* liberis, extrorsis, 1-locularibus. *Pollen* confervoideum. Fl. fœm. *Ovarium* 1-loculare; ovulis plurimis, parietalibus, anatropis; stylo elongato; stigmate obliquo, discoideo, (stigmatibus 3–5, filiformibus, *Gaud.*) *Semina* exalbuminosa, embryone curvo; (semina depresso-subglobosa, umbilico basilari; testa membranacea; albumine farinoso; embryone apice albuminis posito, torto, *Gaud.*)—Herbula *submarina, delicatula;* caule *repente, gracili, nodoso, ad nodos folioso;* foliis *binis longe gracile petiolatis, oblongis v. lineari- v. elliptico-oblongis, obtusis, integerrimis crenulatisve;* costa *crassiuscula;* venis *intramarginalibus, capillaribus v. evanidis;* venulis *e costa divaricatis ascendentibusve;* stipulis *ad nodos binis, oppositis, late oblongis, obtusis, membranaceis, deciduis.*

A very curious plant, of which I have seen no flower or fruit, and I have taken the above description of these in part from Endlicher's 'Genera Plantarum,' for which I believe Gaudichaud is the authority, and in part from some notes and sketches of flowers of both sexes, for which I am indebted to C. Drew, Esq., Assistant-Surgeon in the Madras Army, who examined specimens of apparently the same plant on the Malabar coast. It appears to be a congener of Delile's *Zostera bullata.*—A very slender, submarine, pale-green plant, consisting of a slender, creeping, jointed stem, giving off a pair of long-petioled leaves at each joint. *Leaves* membranous, ½–2 inches long, oblong or elliptic or linear-oblong, blunt, with a slender, intramarginal vein, and stout costa, which gives off slender venules. *Flowers* monœcious in Mr. Drew's notes (according to Gaudichaud diœcious), axillary, solitary, enclosed in two spathaceous bracts. *Male* of three one-celled anthers (two-celled according to Mr. Drew's description, but not his figure), with monadelphous filaments, linear anthers, and confervoid pollen. *Female flower* of one one-celled, many-ovuled ovary, with a slender style, and obliquely truncate, discoid stigma (*Drew*), and three to five stigmas (*Gaud.*). *Seeds* many, according to Gaudichaud, depressed, globose, with copious, farinaceous albumen, and a small, twisted embryo, in a cavity at its apex (but according to Mr. Drew, about twelve, exalbuminous, with a curved embryo?). (Name from ἅλς, *the sea*, and φιλω; in allusion to its marine habitat.)

1. **Halophila ovalis** (Gaud. in Freyc. Voy. Bot. p. 429. t. 40. f. 1); caule gracili, nodis remotis, foliis planis longe petiolatis.—Caulinia ovalis, *Br. Prodr.* 329. Diplanthera, *Griff. Notul. ad Plant. Asiat. Monocot. t.* 161 *C. f.* 2. (*Gunn*, 1346.)

Hab. Found floating in the sea in Bass's Straits, *Gunn.*

Distrib. Tropical and South-western Australia, the peninsula of India, and Madagascar.

Nat. Ord. IX. MELANTHACEÆ.

A small Order, in Australia containing about fifteen species, with one exception extratropical.

Gen. I. BURCHARDIA, *Br.*

Flores umbellati. *Perianthium* inferum, petaloideum, 6-phyllum, foliolis erecto-patentibus, basi nectariferis. *Stamina* 6, basi perianthii inserta; antheris extrorsis, peltatis. *Ovarium* trigonum, acutum, triloculare; ovulis plurimis, biseriatis; stylis 3, brevibus. *Capsula* 3-partibilis, introrsum dehiscens. *Semina* conferta, biseriata, verticaliter compressa; *testa* coriacea.—Herbæ; radicibus *e fibris crassis, fasciculatis;* caule *simplici, foliato;* foliis *linearibus, vagina integra, superioribus subvaginantibus, supremis involucriformibus;* floribus *albis.*

1. **Burchardia umbellata** (Br. Prodr. 273); foliis scapo plerumque brevioribus, pedicellis breviusculis. (*Gunn*, 103.)

Var. *β. parviflora;* caule graciliore, floribus minoribus.

HAB. Northern parts of the Island, as at Launceston, Georgetown, etc., *Laurence, Gunn;* Great Swan Port, *Storey.*—(Fl. Oct., Nov.) Var. *β.* Georgetown.—(Fl. Dec.)

DISTRIB. New South Wales and Victoria.

The only Tasmanian species of this genus forms a small herb, 6–24 inches high, with a root of fleshy, fascicled fibres, an erect, leafy scape, and involucrate umbel, of four to eight star-like, white flowers. *Leaves* linear, spreading and curving outwards, the cauline ones sheathing at the base. *Pedicels* of the flowers very variable in length, ½–1 inch long. *Flowers* extremely variable in size, ⅓ to almost 1 inch across, of six linear-oblong, white, spreading leaflets, each with a nectariferous pit at the base. *Stamens* six, inserted on the base of the segments, with slender filaments and versatile anthers. *Ovary* elliptic, suddenly contracted into three short, spreading stigmas. *Capsule* three-valved, coriaceous; *valves* boat-shaped, laterally compressed, acuminate, bursting inwards. *Seeds* very numerous, in two series in each cell, vertically compressed, densely imbricated, with a pale, coriaceous testa.—Gunn sends a much smaller-flowered and more slender plant, as a variety of this, from Georgetown, and I do not find that it presents any characters but these to distinguish it. (Named in honour of *Henry Burchard, M.D.*, a botanical author.)

Gen. II. ANGUILLARIA, *Br.*

Flores spicati. *Perianthium* inferum, petaloideum, 6-phyllum, foliolis stellato-patentibus, ungue vittato v. biglanduloso. *Stamina* 6, basi perianthii inserta; antheris extrorsis. *Ovarium* trigonum, obtusum, triloculare; ovulis plurimis, biseriatis; stylis 3, erectis. *Capsula* 3-locularis, loculicide 3-valvis, valvis medio septiferis. *Semina* biseriata, subglobosa; *testa* coriacea.—Herbæ; radice *bulbosa, tunicata;* foliis *gramineis, caulinis vaginantibus;* floribus *interdum unisexualibus, albis, purpureo pictis.*

A small genus of five or six species, confined to extratropical Australia.—Small herbs, with bulbous roots, grassy leaves, with inflated sheaths, and spikes of white, star-shaped flowers. *Bulbs* covered with a deep chestnut-brown, shining, membranous coat. *Stems* slender. *Flowers* sessile, sometimes unisexual. *Perianth* of six linear, spreading leaflets, with two glands, or purple, thickened spots or bars about the middle. *Stamens* six, with extrorse anthers. *Ovary* superior, blunt, three-celled, with three recurved styles, and three cells with two rows of ovules in each. *Capsule* trigonous, coriaceous; dehiscence loculicidal. *Seeds* globose. (Named in honour of *Aloys Anguillara*, a Professor of Botany at Padua.)

1. **Anguillaria dioica** (Br. Prodr. 273); floribus spicatis unisexualibus v. hermaphroditis, perianthii foliolis medio biglandulosis v. transverse incrassatis.—*Kunth, Enum.* iv. 158; *Endl. Icon. t.* 3. Pleea Sieberi, *Sieb. Pl. Exsicc.* 156. (*Gunn*, 162.)

Var. *β. multiflora;* foliis latioribus, floribus plurimis majoribus, perianthii foliolis obscure transverse incrassato-vittatis v. omnino nudis.

HAB. Abundant in meadows, pastures, etc., throughout the Island; sea-sand, near Woolnorth, *Gunn.*—(Fl. Aug.–Oct.) (*v. v.*)

DISTRIB. South-eastern and South-western Australia, from New South Wales to Swan River.—Var. *β.* Victoria, *Adamson.*

A small, slender plant, 2 inches to a span high. *Leaves* longer than the scape, spreading and recurved, sheathing base broad and cucullate, lamina elongate-subulate, concave. *Flowers* polygamous, three to six in a spike, very variable in size, ⅓–⅔ inch across. *Leaflets* of the perianth with two, purple, thickened spots about the middle, which usually coalesce and form a transverse, purple band. The var. *β* looks very distinct in Tasmania, but

I have intermediate forms from Victoria; it is larger, with broader leaves, larger, more numerous flowers, and the leaflets of the perianth are very obscurely fasciate.

2. **Anguillaria uniflora** (Br. Prodr. 273); caule 1–2-floro, floribus hermaphroditis, perianthii foliolis medio margines versus late biglandulosis.—*Kunth, Enum.* iv. 159. *An* A. biglandulosæ, *Br., var.?* (*Gunn,* 562.)

HAB. Wet places, amongst grass: Launceston, *Laurence, Gunn;* Huon River, *Oldfield.*—(Fl. Oct.)

DISTRIB. New South Wales.

Very similar in general characters to *A. dioica,* but a much more slender plant, bearing one or two flowers; and the leaflets of the perianth are narrower, and have two thickened glands towards the margins, at about their middle parts.

Gen. III. HEWARDIA, *Hook.*

Flos solitarius, spatha bivalvi inclusus. *Perianthium* basi campanulatum, petaloideum, 6-partitum, laciniis late stellato-patentibus. *Stamina* 3, perianthii laciniis exterioribus basi inserta, antheris lineari-oblongis erectis extrorsis. *Ovarium* conicum, 3-loculare; stylo terminali, stigmatibus 3 revolutis; ovulis plurimis, biseriatis. *Capsula?*—Herba; rhizomate *repente, fibras crassas emittente;* foliis *duris, rigide coriaceis, distichis, basi equitantibus, aversis, lineari-ensiformibus, aveniis, striolatis, integerrimis, subacutis, marginibus discoloribus, lævibus v. vaginisque brevibus rigidis politis;* scapo *gracili, curvo, e centro foliorum ascendente, gracili, rigido, compresso, spathaceo;* spathis *alternis, scapi apice binis, subchartaceis, lineari-lanceolatis, terminalibus florem magnum lurido-purpureum pedicellatum involucrantibus.*

A very singular plant, quite unlike any of its congeners, and far more resembling *Hæmodoraceæ* than *Melanthaceæ,* from its coriaceous habit, lurid flowers, the stamens being only three, and the ovary partially sunk in the short, campanulate base of the perianth. On the other hand, the truly superior ovary, extrorse anthers, three stigmas, and the stamens being inserted on the outer segments of the perianth, conclusively refer it to *Melanthaceæ.*—A small, very rigid, harsh plant, a span high, with hard, coriaceous, distichous, equitant leaves, a spathaceous scape, and one very large, pedicelled, dark-purple, spreading flower, enclosed, when in bud, by two spathes. *Rhizome* short, woody. *Leaves* nearly straight, 3–5 inches long, $\frac{1}{3}$–$\frac{1}{4}$ inch broad, rigid, but not pungent, minutely striate, with shining, brownish margins, and short, broad, open sheaths. *Scape* slender, rigid, compressed. *Spathes* alternate, the two terminal opposite at the apex of the scape, all much more membranous than the leaves, compressed, upper about $1\frac{1}{4}$ inch long, pale brown. *Flower* with a slender pedicel, as long as, or shorter than the spathes, $1\frac{1}{2}$–$2\frac{1}{2}$ inches broad. *Perianth* with a short, campanulate tube, and six nearly equal, long, spreading, linear-lanceolate, acuminate segments. *Stamens* short; *anthers* linear-oblong, erect, extrorse, as long as the filaments. *Ovary* conical, with a short, terminal, erect style, and three rather large, revolute stigmas. (Named in honour of *R. Heward, Esq.,* the friend and biographer of Allan Cunningham, the Australian botanist.)

1. **Hewardia Tasmanica** (Hook. Ic. Plant. t. 858). (*Gunn,* 2054.)

HAB. Heathy plains and mountain ranges near Macquarrie Harbour, *Milligan, Gunn.*—(Fl. Dec.)

Gen. IV. CAMPYNEMA, *Lab.*

Flores solitarii v. paniculati, polygami, unibracteati. *Perianthium* superum, 6-partitum, persistens; foliolis patentibus, coriaceis, ellipticis. *Stamina* 6, perianthii segmentis basi inserta, post anthesin recurva; *antheris* versatilibus, extrorsis. *Ovarium* lineari-clavatum, 3-loculare; *stylis* 3, apice revolutis; *ovulis* dense biseriatis, septis ovarii insertis. *Capsula* linearis, coriacea, tricarinata, perianthio persistente coronata, intus? dehiscens. *Semina* conferta, rufa, immatura verticaliter compressa; *testa* coriacea.—Herba *gracilis, glaberrima;* radicibus *e fibris crassis, fasciculatis;* collo *squamis vaginantibus hyalinis nitidis albis*

onusto; folio *radicali solitario, lineari-elongato v. filiformi, gramineo;* scapo *flexuoso, gracili, tereti, rigido, aphyllo v. basin versus unifoliato, superne vaginato, simplici v. apice subpaniculatim ramoso;* vaginis *parvis, distantibus;* floribus *inconspicuis, erectis, flavo-viridibus.*

A very anomalous plant, referred doubtfully to *Melanthaceæ* by Brown, from Labillardière's unsatisfactory figure, although the perianth is most decidedly superior.—A small, slender, inconspicuous plant, 3–15 inches high, very variable in habit, number, and breadth of leaves, slenderness of scape and leaves, both of which are sometimes filiform, and in number and size of the flowers, which are hermaphrodite or unisexual. *Root* of tufted fleshy fibres. *Base of the stem* surrounded with white, hyaline, shining, linear, acute sheaths, an inch long, external to which is sometimes a dense fibrous mass of decayed sheaths. *Radical leaf* solitary. *Scape* rigid, flexuous, leafless, or with one leaf towards the base, and small, distant, sheathing bracts above. *Flowers* solitary or panicled, erect, $\frac{1}{3}$–$\frac{1}{2}$ inch in diameter. *Ovary* linear-clavate, three-celled, with numerous axile ovules in two series, and three recurved styles. *Perianth* of six spreading, coriaceous, elliptical, subacute segments, the three outer of which are decurrent on the ovary. *Stamens* six, erect, with subulate filaments, which, after the fall of the versatile anthers, are recurved, and project between the segments of the perianth. *Capsule* linear, $\frac{1}{3}$–$\frac{2}{3}$ inch long, coriaceous, three-angled, deeply three-grooved; cells apparently bursting inwards. (Name from καμπυλος, *curved*, and νημα, *a thread;* in allusion to the curved filaments.)

1. **Campynema linearis** (Lab. Pl. Nov. Holl. i. 93. t. 121).—*Br. Prodr.* 291; *Fl. Antarct.* i. 78, *in notes.* (*Gunn,* 954.)

Hab. Heathy places at Middlesex Plains, Rocky Cape, Macquarrie Harbour, between Lake St. Clair and Franklin River; Recherche Bay, etc., ascending to 4000 feet, *Labillardière, Gunn, Milligan.*—(Fl. Jan.–March.)

Nat. Ord. X. SMILACEÆ.

Of this Order there are few Australian genera or species. These consist of *Drymophila,* an *Asparagus,* two of *Eustrephus,* four of *Geitonoplesium,* a *Rhipogonum,* and several species of *Smilax.* The majority of these are natives of the Tropics and East Coast.

Gen. I. DRYMOPHILA, *Br.*

Perianthium petaloideum, 6-phyllum; *foliolis* patentibus, æqualibus, deciduis. *Stamina* 6, hypogyna; *antheris* introrsis. *Ovarium* 3-loculare; *stigmatibus* 3, revolutis; *ovulis* plurimis, biseriatis, anatropis. *Bacca* subglobosa, 3-locularis; *semina* plurima, ovata; *testa* membranacea, cum nucleo connata; *umbilico* basilari, punctiformi; *albumine* dense carnoso; *embryone* axili; *radicula* umbilico proxima.—Herba *perennis;* rhizomate *repente, noduloso;* caulibus *gracilibus, erectis, subflexuosis, vaginatis;* vaginis *membranaceis, distantibus, superne foliatis;* foliis *distichis, sessilibus, e torsione baseos angustata resupinatis, lanceolatis v. lineari-oblongis, acuminatis, striato-nervosis;* pedunculis *axillaribus terminalibusque, solitariis, unifloris, ebracteatis, inarticulatis;* floribus *albis, cernuis;* baccis *cæruleis, pendulis.*

D. cyanocarpa, the only known species, is very closely allied to the genus *Callixene* of New Zealand and South Chili, but differs in the almost sessile, large, revolute stigmas.—A slender herb, with a creeping, perennial rhizome, and slender, annual, erect, simple or rarely-branched stems, 1–2 feet high, which are cylindrical and leafless below, bearing there only a few distant, scarious, sheathing scales, and compressed and leafy above. *Leaves* alternate, 1–3 inches long, linear-lanceolate or oblong-lanceolate, acuminate, distichous, narrowed at the base into a very short petiole, which is half-twisted, so that all the leaves are nearly horizontal. *Flowers* white, $\frac{1}{3}$–$\frac{1}{2}$ inch broad, on slender, curved, solitary peduncles, axillary and terminal, nodding, of six equal, spreading leaflets. *Stamens* six. *Ovary* three-celled, with many ovules. *Styles* three, recurved. *Berry* very variable in size, deep bright-blue

(rarely white), with several ovoid seeds, whose testa is membranous and albumen firmly fleshy. (Name from δρυμος, *a wood*, and φιλω; from its affecting shady places.)

1. **Drymophila cyanocarpa** (Br. Prodr. 292); *Kunth, En.* iv. 212. (*Gunn*, 224.)

Hab. Abundant in grassy, shaded places, amongst Fern, etc.—(Fl. Jan.–Dec.) (*v. v.*)

Nat. Ord. XI. LILIACEÆ.

This Natural Order, in its extended sense, includes all superior-fruited petaloid Monocotyledones that have introrse anthers, trilocular ovaries, and seeds with the testa generally black and crustaceous; it thus includes *Asphodeleæ* and *Hemerocallideæ*, but excludes *Smilaceæ* and *Melanthaceæ;* it is connected with *Junceæ* by various genera. Upwards of 100 Australian species are known, but they are for the most part imperfectly defined.

Gen. I. BLANDFORDIA, *Smith.*

Perianthium marcescens, tubuloso-campanulatum, ore 6-fido. *Stamina* 6, basi tubi inserta; filamentis filiformibus apice cucullo connectivi insertis. *Ovarium* stipitatum, lineare, 3-loculare, in stylum brevem attenuatum; *stigmate* 3-lobo; *ovulis* plurimis, biseriatis, anatropis, horizontalibus. *Capsula* prismatica, basi perianthio vaginata, tripartibilis; loculis angulo interno dehiscentibus, acuminatis, membranaceis. *Semina* biseriata, linearia; *testa* villosa, laxa, fusca, membranacea.—Herbæ *perennes;* radice *fibrosa;* foliis radicalibus *rigidis, lineari-elongatis, basi semivaginantibus, serrulatis integerrimisve;* caulinis *distantibus, abbreviatis;* scapo *tereti;* floribus *racemosis, pedunculatis, pendulis;* pedunculis *apice curvis, basi bibracteatis;* fructibus *erectis.*

A very beautiful genus, of which several species are known, all confined to Eastern and South-eastern Australia and Tasmania. *B. grandiflora* is one of the handsomest plants in Tasmania; it forms an annual herb, with a fibrous, perennial root, having long, narrow linear, coriaceous leaves, 1–2 feet long, with serrulate margins, and a tall, stout, cylindrical flowering scape, 2–3 feet high, bearing a raceme of beautiful, pendulous, deep orange-red flowers, 1–2 inches long.—*Bracts* lanceolate-subulate, varying in length from half as long to as long as the peduncles. *Capsules* erect, stipate, prismatic in shape, narrow linear-lanceolate, acuminate, sheathed below by the persistent perianth. *Seeds* very numerous, linear; *testa* membranous and densely villous, with tawny, soft hairs. (Named in honour of the *Marquis of Blandford*, a patron of Horticulture.)

1. **Blandfordia grandiflora** (Br. Prodr. 296); foliis argute serrulatis, scapo robusto, bracteis anguste lanceolato-subulatis pedunculum floriferum subæquantibus v. brevioribus.—*Kunth, En.* iv. 590; *Lindl. Bot. Reg.* xi. 924. (*Gunn*, 241.)

Var. *β. marginata;* foliis latioribus, bracteis elongatis.—B. marginata, *Herb. in Bot. Reg.* 1242; *Misc. p.* 93; *Lindl. Bot. Reg.* 31. *t.* 18. Aletris punicea, *Lab. Nov. Holl.* i. 85. *t.* 111.

Var. *γ. Backhousii;* floribus subcorymbosis.—B. Backhousii, *Lindl. Bot. Reg.* 31. *sub tab.* 18. (*Gunn*, 241.)

Hab. Not uncommon in sandy soil in various parts of the Island, ascending to 4000 feet. Var. *β.* Rocky Cape. Var. *γ.* Mersey River.—(Fl. Dec.)

Distrib. New South Wales.

This is undoubtedly the *Aletris punicea* of Labillardière, which Brown refers doubtfully to his *Blandfordia grandiflora*. The lower bracts are much larger and longer in the Tasmanian than in other specimens, but there is great variation in their size, as in that of the flower, fruit, and peduncles. Lindley distinguishes *B. Backhousii*, but Gunn, who first suspected that it might prove distinct, has sent later specimens, which present numerous intermediate states. Port Jackson specimens have narrower leaves than the Tasmanian, but are not otherwise different.

Gen. II. ARTHROPODIUM, *Br.*

Flores albi v. purpurascentes, racemosi, pedicellis articulatis. *Perianthium* 6-partitum, æquale, deciduum, basi persistente, patens; *foliolis* interioribus margine undulatis v. fimbriatis. *Stamina* 6; *antheris* linearibus, basi deformibus v. barbatis, filamentis nudis v. barbatis. *Ovarium* 3-loculare, stylo filiformi, stigmate simplici setoso, ovulis plurimis. *Capsula* subglobosa, 3-locularis, loculicide trivalvis. *Semina* pauca, subangulata, umbilico nudo; *testa* atra.—Herbæ; radice *e fibris crassis v. tuberosis;* foliis *radicalibus, linearibus, flaccidis;* floribus *racemosis.*

This genus, as at present known, is confined to Australia, Tasmania, and New Zealand. In the former countries about eight are indigenous; these have been divided into two genera by Kunth, according as whether the anthers are simple or appendiculate at the base, and the filaments glabrous or bearded. These characters are however combined in some species, and the *A. cirrhatum* of New Zealand has spurs or appendices upon the filaments at the base of the bearded portion, which altogether resemble the appendices of the anthers of some of the Australian species.—Annual herbs, with perennial, fibrous, or tuberous roots, the fibres becoming more or less spindle-shaped or rounded tubers, narrow linear, grassy leaves, and simple or branched racemes of white or purplish nodding flowers. *Perianth* of six spreading, membranous leaflets, the three inner rather smaller, undulate, crenate, or fimbriate. *Stamens* six; filaments naked or bearded; anthers linear, their lobes simple or appendiculate or bearded at the base. *Ovary* three-celled, with many ovules, and a simple style terminating in a setose stigma. *Capsule* with many compressed, angular seeds, covered with a black testa. (Name from *αρθρος, a joint,* and *πους, a foot;* in allusion to the jointed pedicels.)

§ 1. *Filaments bearded above the middle.*

1. **Arthropodium paniculatum** (Br. Prodr. 276); 1–2-pedalis, tuberibus cylindraceis, racemo ramoso, pedicellis solitariis et aggregatis medio articulatis gracillimis, floribus albis v. pallide purpureis, bracteis parvis ovatis, foliolis interioribus subcrenatis, filamentis dense stuposo-barbatis, antheris basi nudiusculis, stylo filiformi.—*Bot. Mag. t.* 1421; *Endl. Ic. t.* 28. A. minus, *Lindl. Bot. Reg. t.* 866. A. Lindleyi, *Kunth, En.* iv. 621. Anthericum paniculatum, *And. Bot. Rep. t.* 395. A. milleflorum, *Red. Lil. t.* 58. (*Gunn,* 98, 951.)

HAB. Abundant throughout the Island, ascending to 1500 feet.—(Fl. Dec.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

Exceedingly variable in size, from 6 inches to a yard high, with the leaves from 2 inches to 2 feet long, and varying proportionately in robustness and breadth of leaves, ramification of raceme, and number of flowers. *Flowers* white or purplish, on very slender pedicels, generally in pairs; their bracts always small, ovate. *Filaments* densely villous, with pale hairs for two-thirds of their length. *Anthers* yellow or purplish, with a few hairs at the base of the lobes. *Style* long and slender.

2. **Arthropodium pendulum** (De Cand. Cat. Hort. Monsp. 80); 1–2-pedalis, racemo simplici v. ramoso, pedicellis gracilibus medio articulatis solitariis et aggregatis, floribus purpureis, bracteis parvis ovatis, foliolis interioribus subcrenatis, filamentis dense stuposo-barbatis, barba inferne flava superne purpurea, antheris basi subpilosis, stylo filiformi.—*Kunth, En.* iv. 620. Phalangium pendulum, *Red. Lil. t.* 360. (*Gunn,* 563, 100?)

HAB. Abundant in the northern parts of the Island, as at Launceston, Woolnorth, the Hampshire Hills, etc., *Scott, Gunn.*—(Fl. Dec.)

Very nearly allied indeed to *A. paniculatum,* and perhaps only a distinct variety; it differs chiefly in the less compound raceme, shorter peduncles, deep-purple flowers, the pedicelled, fusiform tubers of the root, and in the beard of the filament being yellow below and purple above.

3. **Arthropodium minus** (Br. Prodr. 276); 6–10-pollicaris, tuberibus cylindraceis sessilibus, racemo simplici, floribus subsolitariis, bracteis inferioribus subspathaceis, pedicellis supra medium articulatis, floribus purpureis, filamentis brevibus supra medium dense stuposis, antheris basi barbatis, stylo brevi curvo.—*Kunth, En.* iv. 621; *non Lindl. in Bot. Reg.* (*Gunn*, 950.)

HAB. Rich pasture-land in the northern parts of the Island, as at Formosa, Circular Head, and Lake River, *Gunn.*—(Fl. Nov.)

DISTRIB. New South Wales and Victoria.

A very pretty and distinct little species, 6–8 inches high, with short leaves, and a simple (rarely branched) raceme of purple flowers. *Tubers* quite sessile and cylindrical. *Stamens* shorter than in the preceding species. *Style* short and curved.

§ 2. *Filaments glabrous. Anther-lobes produced at the base into short, obtuse, glandular appendices.*

4. **Arthropodium laxum** (Sieb. Pl. Exsicc. 194); 1–3-pedalis, tuberibus pedicellatis, racemo simplici v. ramoso, bracteis inferioribus elongatis infimis spathaceis, pedunculis solitariis apice articulatis, floribus purpureis, filamentis imberbibus, antheris lineari-elongatis, loculis basi in appendices breves productis. —Dichopogon Sieberianus *et* D. humilis, *Kunth, En.* iv. 623. (*Gunn*, 100.) (TAB. CXXXI.)

HAB. Abundant in good soil throughout the Colony.—(Fl. Oct.–Dec.) (*v. v.*)

DISTRIB. New South Wales, Victoria, and South Australia.

Similar in habit and general aspect to *A. pendulum*, but at once distinguished by the larger flowers, the solitary peduncles jointed close to the flower, the large lower bracts, and the peculiar anthers.—PLATE CXXXI. Fig. 1, flower; 2, stamen; 3, pistil; 4, transverse section of ovary; 5, capsule; 6, transverse section of ditto; 7, seed; 8, the same, cut longitudinally:—*all magnified.*

? §. *Flores ignoti.*

5. **Arthropodium strictum** (Br. Prodr. 276); "racemo subsimplici multifloro, pedicellis solitariis, capsulis erectis."

HAB. Tasmania, *Brown.*

Gen. III. BULBINE, *L.*

Flores dense racemosi, erecti, flavi. *Perianthium* patens, 6-phyllum, foliolis patentibus. *Stamina* 6; *filamentis* omnibus v. 3 interioribus barbatis; *antheris* versatilibus. *Ovarium* 3-loculare; *stylo* filiformi; *stigmate* papilloso; *ovulis* paucis, 2-seriatis. *Capsula* coriacea, loculicide 3-valvis, oligo- v. polysperma. *Semina* angulata, compressa; *testa* atra v. fusca albumini adhærente; *embryone* recto v. curvo.—Herbæ; radice *fasciculato-fibrosa; caule basi interdum bulboso; foliis linearibus, canaliculatis;* racemo *simplici, erecto, cylindraceo.*

About five or six Australian species of this genus are known to me; there are also a great many Cape species; but neither the limits of the genus nor its species are at all well known. They are further very difficult to preserve, retaining their vitality under pressure for many weeks.—The Australian *Bulbines* are all erect herbs, with fascicled, fibrous or tuberous roots, linear leaves, and erect scapes, bearing simple racemes of erect, yellow, spreading flowers. *Perianth* of six equal, spreading leaflets. *Stamens* six, all, or the inner only, bearded on the filaments. *Anthers* versatile. *Ovary* three-celled, with about six ovules in each cell, a simple, straight style, and papillose stigma. *Capsule* coriaceous, three-valved. *Seeds* few, with a coriaceous or subcrustaceous, dark opaque testa. (Name from *bulbus*, a bulb.)

1. **Bulbine bulbosa** (Haworth, Revis. 33); radicis fibris crassis, caule basi bulboso incrassato, racemo primum densifloro apice conico, filamentis omnibus supra medium barbatis declinatis.—Anthericum bulbosum, *Br. Prodr.* 275.

HAB. Abundant in rocky places throughout the Island.—(Fl. Oct., Nov.) (*v. v.*)
DISTRIB. New South Wales and Victoria.

A handsome herbaceous plant, 1–2 feet high. *Root* of thick fascicled fibres, with difficulty removed from the soil. Base of stem thickened in old plants, sometimes forming a very distinct bulb. *Leaves* linear elongate, terete on the back, plane or channelled in front. *Raceme* 2–4 inches long. *Flowers* very numerous, on slender peduncles, with ovate acuminate scarious bracts at the base. *Filaments* all with a tuft of hairs above the middle. *Capsule* erect, obovate-globose, with few seeds.

2. **Bulbine semibarbata** (Haworth, Revis. 33); radice fibris tenuibus, caule basi simplici, racemo laxifloro, filamentis declinatis interioribus supra medium barbatis.—*Kunth, En.* iv. p. 565. Anthericum semibarbatum, *Br. Prodr.* 275; *Hook. Bot. Mag. t.* 3129. (*Gunn,* 949.)

HAB. Common in moist and marshy places in various parts of the Island.—(Fl. Nov., Dec.) (*v. v.*)
DISTRIB. Extratropical Australia, from New South Wales to Swan River.

A much less handsome plant than *B. bulbosa*, with slender fibrous roots, easily removed from the soil, a longer laxer raceme of smaller flowers and fruit, and having the filaments bearded above the middle only.

Gen. IV. CÆSIA, *Br.*

Flores racemosi v. corymbosi, albi v. cærulei, pedicellis apice articulatis. *Perianthium* patens, æquale, 6-partitum, post anthesin tortum. *Stamina* 6; *filamentis* gracilibus, imberbibus; *antheris* brevibus, basi emarginata insertis. *Ovarium* 3-loculare; *stylo* filiformi; *stigmate* simplici; *ovulis* loculis 2–4. *Capsula* clavata, apice lobata, vix valvata, loculis 1–2-spermis. *Semina* loculis 2–4; *testa* crustacea, atra.—Herbæ; radicibus *e fibris interdum tuberosis, fasciculatis*; foliis *gramineis*; racemo *simplici v. paniculato, composito v. corymboso*; pedicellis *solitariis v. aggregatis*; floribus *erectis v. nutantibus*; perianthio *mox deciduo*; antheris *flavis.*

Of this genus about ten species are known to me, all of them Australian or Tasmanian. One is tropical, the rest inhabit the extratropical quarter, none however being common to the south-east and south-west. All are rather slender, white- or blue-flowered herbs, with roots of fascicled, sometimes tuberous fibres, linear grass-like leaves, and a racemose inflorescence.—*Flowers* jointed on the pedicel. *Perianth* of six spreading leaflets. *Stamens* six, with naked filaments and small anthers. *Ovary* three-celled; cells with from two to four ovules in each. *Style* slender, with a small stigma. *Capsule* clavate, three-celled, obscurely three-valved, cells one- or two-seeded. *Seeds* with a crustaceous testa. (Named in honour of *Frederic Cæsius*, a botanist of the middle of the seventeenth century.)

§ 1. *Flowers corymbose. Ovary with four ovules in each cell. Capsule obcuneate, with four shining compressed seeds in each cell.*

1. **Cæsia corymbosa** (Br. Prodr. 277); parvula, radicibus e fibris tuberosis crassis, foliis planis ciliolatis, floribus subcorymbosis erectis, perianthii foliolis late ovatis, filamentis gracillimis, capsula obcuneata 4-sperma, seminibus splendentibus.—*Kunth, En. Plant.* iv. 609. (*Gunn,* 346.) (TAB. CXXXII. A.)

HAB. Abundant in grassy places throughout the Island.—(Fl. Oct.) (*v. v.*)
DISTRIB. Victoria.

A charming little plant, conspicuous in grassy pastures from the beautiful blue of its star-shaped flowers. *Roots* of thick, tuberous, fleshy fibres. *Leaves* flat, plane, linear, rather obtuse, ciliolate, 2–3 inches long. *Scape* longer than the leaves, sparingly branched in a corymbose form above. *Flowers* erect, about ½ inch in diameter. *Filaments* very slender. *Capsule* rather membranous, with four shining compressed black seeds in each cell. This,

and one or two other South Australian species, belongs to a different section of the genus from the following, having, besides the characters given above, broad segments of the perianth, slender filaments, and membranous capsules.—PLATE CXXXII. *A.* Fig. 1, flower; 2, stamen; 3, ovary; 4, the same, cut transversely; 5, capsule; 6, transverse section of ditto; 7, seed; 8, the same, cut longitudinally:—*all magnified.*

§ 2. *Flowers racemose. Ovary with two ovules in each cell. Capsule broadly globose, coriaceous, three-lobed; lobes with two or three globose, opaque seeds, with a large umbilicus.*

2. **Cæsia parviflora** (Br. Prodr. 277); radicibus e fibris cylindricis elongatis fasciculatis, foliis anguste lanceolatis v. filiformibus, racemis strictis gracilibus basi divisis, floribus parvis binis v. aggregatis erectis, perianthii foliolis lineari-oblongis, filamentis planis, capsula brevi 3-loba, lobis 1–2-spermis, seminibus globosis, umbilico lato, testa atra opaca granulata.—*Kunth, En.* iv. 609. (*Gunn,* 1383.)

HAB. Sandy soil: in the northern coasts of the Colony, at Georgetown, Launceston, etc.—(Fl. Dec., Jan.)

DISTRIB. New South Wales (*Brown*), South-west Australia?

I am uncertain whether this or the following is the *C. parviflora*, Br., but incline to refer this to it, from the roots being truly fibrous. I have not, however, seen any Australian specimens of the present species, except, indeed, it be the same as a Swan River one, which it closely resembles. Of this Tasmanian *C. parviflora* I have two varieties, one smaller, with filiform leaves, from sand-hills at Georgetown, the other from Penquite, with rather broader leaves.—*Roots* of fascicled, cylindrical, rather fleshy fibres. *Leaves* 3–7 inches long, very narrow. *Racemes* strict, erect, slender, branched at the base, many-flowered. *Flowers* small, ¼ inch long, erect, pedicelled, the pedicels clustered by two or more in the axil of each small membranous bract. *Pedicels* about as long as the flowers. *Perianth* with linear-oblong lobes.

3. **Cæsia vittata** (Br. Prodr. 277); radice e fibris crassis tuberosis fusiformibus, foliis lanceolato-linearibus gramineis planis, racemis strictis basi divisis v. paniculatim ramosis, floribus aggregatis erectis nutantibusque, perianthii foliolis linearibus, filamentis basi et apice angustatis, capsula subglobosa 3-loba, lobis 1–2-spermis, seminibus globosis, hilo late strophiolato, testa atra opaca minutissime granulata.—*Kunth. En.* iv. 608. (*Gunn,* 99.)

HAB. Common in grassy places, and especially in the northern parts of the Island: Launceston, *Laurence, Gunn.*—(Fl. Oct., Dec.)

DISTRIB. New South Wales, Victoria, and South Australia.

A very pretty plant, not easily distinguishable by descriptions from *C. parviflora*, but much larger in all its parts, with longer, broader leaves, a more branched, often spreading panicle of racemose flowers nearly ½ inch long, and the seeds not so strongly granulated.

Gen. V. THYSANOTUS, *Br.*

Flores cærulei, umbellati v. sparsi, pedicellis medio articulatis. *Perianthium* 6-partitum, æquale, persistens; foliolis exterioribus angustioribus, interioribus utrinque coloratis margine fimbriatis v. nudis. *Stamina* 6; *filamentis* brevibus, glabris; *antheris* apice productis. *Ovarium* 3-loculare; *stylo* elongato, gracili; *stigmate* simplici; *ovulis* 2. *Capsula* perianthio involuta, membranacea, 3-locularis, loculicide 3-valvis. *Semina* loculis 2, altero pendulo, altero erecto; *testa* atra, crustacea; *umbilico* strophiolato.—Herbæ; radicibus *tuberosis fibrosisve;* caule *stricto v. volubili;* foliis *linearibus v.* 0; floribus *solitariis paniculatis umbellatisve.*

The largest Australian genus of the Order, containing upwards of thirty species, found in both temperate and tropical regions, but confined to Australia and Tasmania, with the exception, perhaps, of a Philippine Island

plant (Cuming, 981), which has been doubtfully referred by Planchon, from an imperfect specimen, to this genus. Considering how abundant this genus is in Australia, its rarity in Tasmania is remarkable. *T. Patersoni*, the only Tasmanian species hitherto known, is a slender, annual, twining, leafless plant, with a perennial root of many stalked or sessile tubers.—*Stem* as thick as small twine, simple, terete, and straight at the base, soon becoming flexuous, angled, and branched. *Flowers* about $\frac{1}{3}$ inch across, numerous, blue-purple, on stout pedicels, solitary or alternate, pedicels with small bracts at the base. *Perianth* of six equal spreading pieces, that are persistent, and enclose the capsule; outer leaflets narrow, with membranous edges; inner broad, margins not fimbriate. *Stamens* six, rather unequal, with short filaments and linear membranous anthers, whose cells are white and membranous at the apex. *Capsule* membranous, three-celled, with two superimposed compressed seeds in each cell. *Testa* black, rather shining; funiculus expanded at the hilum into a membranous arillus. (Name from *θυσανωτος*, *fringed;* in allusion to the fringed perianth.)

1. **Thysanotus Patersoni** (Br. Prodr. 284); radicibus tuberosis fasciculatis, caule volubili ramoso aphyllo, ramis angulatis patentibus, floribus sparsis breve pedicellatis, staminibus 6, antheris apice membranaceis.—*Kunth, En.* iv. 616. (*Gunn*, 351.)

HAB. Creeping amongst grass, not uncommon in many parts of the Island, but easily overlooked.—(Fl. Oct., Nov.) (*v. v.*)

DISTRIB. Victoria and South Australia.

Gen. VI. HERPOLIRION, *H.f.*

Flos spathis duabus inclusus. *Perianthium* tubuloso-campanulatum, 6-partitum, foliolis æqualibus lineari-oblongis. *Stamina* 6, filamentis filiformibus; antheris demum subtortis. *Ovarium* oblongum, 3-loculare; stylo filiformi; stigmate simplici; ovulis plurimis biseriatis.—Herbæ; rhizomate *repente, radicante;* foliis *linearibus, subglaucescentibus, basi vaginantibus;* flore *sessili, luteo v. pallide cæruleo;* perianthii *foliolis exterioribus multinerviis, interioribus paucinerviis.*

A remarkable little genus, of only two known species, one a native of the mountains of New Zealand, and the other of those of Tasmania. The *H. Tasmaniæ* is a small alpine plant, with slender, creeping, tufted rhizomes, sending up very short stems, bearing spreading leaves and one sessile flower.—*Leaves* 1–3 inches long, glaucous, linear, acute, the inner shorter, passing into spathaceous bracts, the two last of which enclose the flower. *Flower* quite sessile, erect, very variable in size, from $\frac{1}{3}$ to 1 inch long, of a fine pale-blue, varying to yellowish and white (according to Gunn). *Perianth* campanulately six-parted; segments very variable in length and breadth, from oblong to narrow-linear. *Stamens* six, with slender, slightly pubescent filaments, and small linear-oblong anthers, emarginate at the base, twisted when old. *Ovary* oblong, three-celled, with a slender straight style, and many ovules in each cell. (Name from *ἑρπω*, *to creep*, and *λιριον*, *a lily.*)

1. **Herpolirion Tasmaniæ** (H. f. in Fl. N. Zeal. i. 258.) (*Gunn*, 371.) (TAB. CXXXII. *B.*)

HAB. Summits of the Western Mountains, in wet places; banks of Lake St. Clair, covering large patches of ground, *Gunn.*—(Fl. Dec., Jan.)

DISTRIB. Mountains of Victoria, *Mueller.*

PLATE CXXXII. *B.* Fig. 1, flower; 2, outer sepal; 3, inner ditto; 4, stamen; 5, pistil; 6, transverse section of ovary:—*all magnified.*

Gen. VII. TRICORYNE, *Br.*

Flores flavi, umbellati, erecti. *Perianthium* patens, æquale, 6-partitum, deciduum, post anthesin tortum. *Stamina* 6; *filamentis* penicillatis. *Ovarium* 3-partitum, lobis 2-ovulatis, basi stylo filiformi connexis; stigmate simplici. *Capsula* profunde 1–3-loba, lobis evalvibus clavatis monospermis. *Semina*

ovoidea; *testa* atra, crustacea, opaca.—Herbæ; radice *fibrosa;* foliis *gramineis;* caule *vel* scapo *ramoso;* ramis *basi bracteatis;* floribus *pedicellatis;* pedicellis *articulatis.*

I have seen eight or ten Australian species of this genus; they inhabit various parts of the tropica land extratropical coasts. The genus is best known by its erect, yellow flowers being collected into small, bracteate umbels; by the ovary being deeply three-lobed; by the hairy filaments; and by the fruit being formed of one to three coriaceous, indehiscent, one-seeded cocci; the roots are fibrous, leaves grassy, and inflorescence branched. *T. elatior* is a slender plant, 1–2 feet high, with slender, compressed, divaricating branches, and small umbels of four to seven shortly pedicelled flowers. (Name from τρεις, *three*, and κορυνη, *a club;* in allusion to the form of the carpels.)

1. **Tricoryne elatior** (Br. Prodr. 278); caule teretiusculo ramoso folioso, ramis gracilibus divaricatim ramosis angulatis, foliis planis, umbellis 4–7-floris.—*Bauer, Ill. Plant. Nov. Holl. t.* 11; *Endl. Icon. t.* 61; *Kunth, En.* iv. 612. (*Gunn,* 1384.)

HAB. South Esk River, thirty miles from Launceston, *Gunn;* Cheshunt, *Archer.*—(Fl. Dec.)

DISTRIB. Tropical and temperate coasts of Australia, from Port Curtis to Swan River.

Gen. VIII. STYPANDRA, *Br.*

Flores cærulei flavi v. albicantes, paniculatim corymbosi; pedicellis articulatis, umbellulatis. *Perianthium* 6-partitum, æquale, patens, deciduum. *Stamina* 6; *filamentis* infra attenuatis curvatis glabris, supra stuposo-barbatis pubescentibusve. *Ovarium* 3-loculare; *stylo* filiformi; *stigmate* simplici; *ovulis* plurimis. *Capsula* 3-locularis, 3-valvis. *Semina* pauca, ovalia, umbilico nudo; *testa* atra, splendente; *embryone* recto.—Herbæ *subrigidæ, perennes;* rhizomate *repente, radices fibrosas emittente;* foliis *lineari-ensiformibus, distichis, vaginis integris v. semivaginantibus;* antheris *demum revolutis, filamentorum barbisque flavis.*

The species of *Stypandra*, about ten of which are known to me, are all natives of Australia and Tasmania, except one New Caledonian species; they are rather rigid, perennial plants, with creeping rhizomes, fibrous roots, and distichous, sometimes glaucous, ensiform leaves.—*Scape* or *stems* naked or leafy, branched. *Flowers* white, blue, or yellowish, in panicled corymbs or umbels. *Perianth* of six, equal, spreading pieces. *Stamens* six; *filaments* contracted below the middle, densely bearded above. *Ovary* three-celled; *cells* many-ovuled; *style* slender, erect. *Capsule* three-celled, three-valved. *Seeds* few, with a brilliantly-polished, black, crustaceous testa. (Name from στυπη, *tow*, and ανηρ, *a stamen.*)

1. **Stypandra cæspitosa** (Br. Prodr. 279); 2–3-pedalis, foliis radicalibus anguste lineari-ensiformibus planis margine scabris vaginis fissis, caulinis abbreviatis, scapo pluries dichotome paniculatim ramoso, pedicellis umbellatis alternisve bracteatis perianthiisque glaberrimis.—*Sieb. Plant. Exsicc. n.* 201, 263; *Kunth, En.* iv. 626. (*Gunn,* 1386.)

HAB. Sandy, wet land: near Georgetown, and probably elsewhere in the Colony, abundant, *Gunn.*—(Fl. Dec., Jan.)

DISTRIB. New South Wales and Victoria.

Very variable in size, but usually from 2 to 3 feet high. *Leaves* shorter, or rather longer, than the scape, narrow-linear, rigid, glaucous; margins rough. *Scape* repeatedly divided in a dichotomous manner; the branches alternate; pedicels umbellate or alternate. *Flowers* blue or yellow, about $\frac{1}{2}$–$\frac{2}{3}$ inch across. *Filaments* densely pubescent for nearly their whole length.

2. **Stypandra umbellata** (Br. Prodr. 279); 6-pollicaris v. pedalis, foliis strictis lineari-ensiformibus margine lævibus vaginis fissis, caulino solitario abbreviato, scapo parce ramoso, pedicellis 2–4 umbellatis perianthiisque glaberrimis.—*Sieb. Plant. Exsicc.* 200; *Kunth, En.* iv. 626. (*Gunn,* 766.)

Hab. Abundant in sandy soil throughout the Colony.—(Fl. Nov., Dec.) (*v. v.*)

Distrib. New South Wales and Victoria.

Gunn doubts whether this be distinct from *S. cæspitosa*, and his doubts are probably well founded; it differs chiefly in its much smaller size, shorter leaves, with smooth margins, less branched inflorescence, and more uniformly umbellate flowers; but all these characters are very fallacious.

Gen. IX. DIANELLA, *Lamarck.*

Flores albi v. cærulei, paniculati, pedicellis apice articulatis. *Perianthium* 6-partitum, æquale, patens, deciduum. *Stamina* 6; *filamentis* curvis, superne incrassatis, glabris pubescentibus stuposisve; *antheris* linearibus, strictis, basifixis. *Ovarium* 3-loculare; stylo gracili; stigmate simplici; ovulis plurimis. *Bacca* globosa v. oblonga, 3-locularis; loculis polyspermis. *Semina* ovoidea; *testa* atra, splendente; *umbilico* nudo.—Herbæ *rigidæ, perennes;* rhizomate *repente;* radicibus *fibrosis;* foliis *rigide coriaceis, gramineis, basi semivaginantibus;* pedicellis *basi bracteola unilaterali stipatis;* floribus *nutantibus;* baccis *cæruleis.*

A large genus, found in Madagascar, in the tropical parts of India, the Malayan and Polynesian Islands, and New Zealand. About ten Australian and Tasmanian species are known to me; they are very difficult to discriminate; and I am not certain that any of the species I have named according to Brown's 'Prodromus,' are really the plants there described, nor that all here distinguished are really distinct. The stamens appear to me to afford the best characters. In general structure the genus is closely allied to *Stypandra*, but the species are of a larger, coarser, more rigid growth, the flowers panicled, the filaments thickened and often pubescent, or tomentose above the curved, glabrous portion, the anthers short or long, and straight, and the fruit is a blue, indehiscent berry. (Name from *Diana*, as Goddess of woods.)

1. **Dianella cærulea** (Sims, Bot. Mag. t. 505); foliis caulinis numerosis elongatis ensiformibus (½ unc. latis) marginibus et carina serrulatis, paniculæ ramis brevibus parum divisis, pedicellis confertis perianthio brevioribus, filamenti parte incrassata anthera flava breviore, bacca parva globosa.—*Red. Lil. t.* 79; *Br. Prodr.* 279. (*Gunn,* 1387.)

Hab. Near Launceston, *Gunn;* Cheshunt, *Archer.* (Fl. Nov.?)

Distrib. Eastern and Southern Australia, from the tropic to Victoria.

The only Tasmanian specimens of this plant which I have seen, were grown in Mr. Gunn's garden at Penquite, but were transplanted there from the neighbourhood. It agrees well with the figures quoted, and with the description of Brown, except in the branches of the panicle being curved; in this respect it resembles the *D. revoluta*, which is figured in the 'Botanical Register' as having straw-coloured anthers (but described as having them fuscous). *D. revoluta* of the 'Botanical Register' is another allied plant, with toothed margins to the leaf (as the Tasmanian plant and the *D. cærulea* have), but Brown describes that species as having the margins of the leaf smooth. All these are possibly varieties of one, some of my subtropical specimens of *D. cærulea* having the leaves very obscurely rough here and there on the margins. The broad, serrulate leaves, short, curved pedicels, and yellow anthers, being longer than the thickened part of the filament, best distinguish this plant from its Tasmanian congeners.

2. **Dianella longifolia** (Br. Prodr. 280); foliis radicalibus longe et anguste lineari-ensiformibus (vix ½ unc. latis) margine carinaque lævibus, paniculæ ramis elongatis gracilibus parum divisis, pedicellis gracilibus flore longioribus, filamenti apice incrassato lineari parte inferiore æquilongo et anthera fusca breviore.—*Lindl. Bot. Reg.* 734; *Kunth, En.* v. 54. (*Gunn,* 564 *in parte.*)

Hab. Tasmania, *Gunn.*

Distrib. New South Wales.

A tall plant, 3 feet high, very slender, with very long, narrow leaves, whose margins and carina are smooth.

Panicle large, spreading, very much branched; branches slender, spreading, more or less curved; pedicels also long and slender. *Flowers* deep blue. *Filaments* about as long as the yellow-brown anthers; swollen part of the filament about as long as the lower part. Lindley states, under his *D. revoluta*, t. 1120, that the figure of *D. longifolia* (734) is perhaps not Brown's plant, but a luxuriant variety of the *revoluta*. The present plant however so well agrees with Brown's description of *D. longifolia*, and Lindley's plate of that name, that in the absence of more definite descriptions of the anthers and filaments in the 'Prodromus,' I feel obliged to consider it as such.

3. **Dianella lævis** (Br. Prodr. 280); foliis radicalibus late ensiformibus planis caule brevioribus, marginibus et carina vix elevata lævibus, caulinis paucis distantibus, panicula parce ramosa elongata, ramis breviusculis, pedicellis flore æquilongis gracilibus, filamenti parte superiore incrassata lineari anthera fusca æquilonga, parte inferiore brevissima.—*Kunth, En.* v. 54. ? D. elegans, *Kunth et Bouché, Ind. Sem. Hort. Berol.* 1848, *fide Kth. l. c.* (*Gunn*, 566, *in part.*)

HAB. Tasmania, *Fraser:* Hampshire Hills, *Gunn.*—(Fl. Sept., Oct.)

DISTRIB. New South Wales.

I have only a portion of a large plant, with a young leaf, from Fraser, and the top of a panicle from Gunn. In general appearance it resembles the other species, but the leaf is described by Brown as flat, with an inconspicuous keel, and in my specimens the thickened part of the filament is linear, as long as the anther, and the lower part is extremely short.

4. **Dianella revoluta** (Br. Prodr. 280); foliis radicalibus anguste lineari-elongatis (½ unc. latis) marginibus revolutis carinaque prominente lævibus, caulinis paucis, paniculæ elongatæ ramis breviusculis gracilibus paucifloris pedicellisque arcuatis, filamentorum parte incrassata brevi anthera fusca multoties breviore, parte inferiore gracili incrassata subæquilonga, baccis globosis.—*Kunth, En.* v. 49; *Sieb. Pl. Exsicc.* 198; *an Bot. Reg. t.* 1120? ? D. angustifolia, *Schult. Syst.* vii. 352, *ex Kunth, l. c.* (*Gunn*, 564.)

HAB. Common in poor sandy soil on the north coast, and probably throughout the Island, *Gunn, Archer, etc.*—(Fl. Nov., Dec.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

A tall, handsome plant, 2–4 feet high, with long, narrow, rigid leaves, very revolute at the margins, and narrow, elongate, branched panicles of numerous blue flowers. *Leaves* with the margins and very prominent keel smooth. *Anthers* fuscous, much longer than the thickened portion of the filament, which is very short, yellow, and rather shorter than the glabrous, subulate base of the filament.

5. **Dianella Tasmanica** (Hook. fil.); 4–5-pedalis, foliis radicalibus late et longe ensiformibus (1 unc. latis) marginibus revolutis carinaque prominula serrulatis, panicula decomposite ramosa pedunculis subfasciculatis pedicellisque curvis, antheris fuscis parvis brevibus filamentorum parte incrassata brevioribus, baccis globosis. (*Gunn*, 565.) (TAB. CXXXIII. *A.*)

HAB. Common in rich moist soil: Circular Head, Woolnorth, etc., *Gunn.*

DISTRIB. Victoria.

Much the largest Tasmanian species, attaining a height of 5 feet, with the leaves 3–4 feet long, and 1 inch broad, their margins revolute, and prominent keel serrulate. *Panicle* 1–2 feet long, very robust, much branched, the branches somewhat fascicled. *Anthers* very short and small, fuscous, shorter than the long, large, thickened apex of the filament; lower glabrous part of filament very short.—Gunn says that this is a much larger plant than *D. revoluta*, with paler blue flowers, and with the perianth completely reflexed when fully expanded. The perianth seems to grow considerably as the fruit ripens, and encloses the berry; but all the fruiting specimens having been immersed in boiling water to facilitate their drying, it is impossible to examine them satisfactorily. I have a specimen of what appears the same species, from Victoria, sent by the indefatigable Mueller with *D. revoluta*. The very small anthers being much shorter than the thickened part of the filaments, distinguish the species.

Plate CXXXIII. *A.* Fig. 1, flower; 2 and 3, front and back view of stamens; 3, transverse section of ovary:—*all magnified.*

6. **Dianella Archeri** (Hook. fil.); 1–2-pedalis, foliis radicalibus late et longe ensiformibus (1 unc. latis) margine revolutis carinaque serrulatis, panicula parce ramosa, pedunculis pedicellisque curvis, floribus campanulatis, sepalis interioribus late oblongis, filamentis crassis elongatis anthera multo longioribus 3 exterioribus sepalis semiadnatis, baccis oblongis. (Tab. CXXXIII. *B.*)

Hab. Cheshunt, *Archer.*

A remarkably distinct-looking species, most similar to *D. Tasmanica*, with which it agrees in foliage, but it is smaller, with a less-branched panicle, larger campanulate flowers, very much broader segments of the perianth, and large oblong berry. The filaments are long and stout, but not so thickened upwards as in *D. Tasmanica*, and the outer series are adnate for half their length to the sepals.

Plate CXXXIII. *B.* Fig. 1, flower; 2, outer sepal and stamen; 3, inner sepal; 4, inner stamen; 5, ovary; 6, berry; 7, seed:—*all magnified.*

Gen. X. XANTHORRHŒA, *Smith.*

Flores multibracteati, in spicam amentiformem densissime congesti. *Perianthium* 6-partitum, foliolis basi conniventibus, interioribus concavis. *Stamina* 6, basi perianthii inserta; *filamentis* linearibus, glabris, exsertis; *antheris* versatilibus. *Ovarium* 3-loculare; *stylo* erecto trisulco; *stigmate* simplici. *Capsula* ovata, lignea, trilocularis, loculicide trivalvis; loculis polyspermis. *Semina* pauca, compressa; *testa* atra, crustacea, umbilico nudo; *albumine* carnoso; *embryone* transverso. — Plantæ *perennes, habitu proprio;* trunco *subnullo v. erecto, subarboreo, crasso;* foliis *ad apicem caudicis numerosissimis effusis, longissime linearibus, gramineis, subtriquetris, basibus dilatatis, persistentibus, corticem spurium efficientibus et sæpissime resina scatentibus;* scapo *robusto, simplici, tereti;* floribus *albis, parvis;* bracteis *unguiculatis, imbricatis;* capsulis *exsertis, brunneis, nitidis.*

One of the most remarkable of Australian genera, some species of which are well known to the colonists as "Black-boys." One of the larger species, with tall, erect trunks, occurs in Tasmania, where the dwarf kinds are more abundant. Brown enumerates seven species, all natives of the eastern and south-eastern shores of Australia or of Tasmania, and several others are described from the Swan River Colony. In all, the bases of the leaves are persistent, and form a more or less complete spurious bark to the trunk; they are further, in some species, cemented together by a copious exudation of rich, red-brown, fragrant resin.—*Leaves* very numerous, effuse, narrow-linear, pendulous from beyond the middle. *Flowers* collected into dense cylindrical spikes, 6 inches to 2 feet long, sessile, bracteate. *Perianth* of six obovate, rather coriaceous or scarious leaflets. *Stamens* inserted at the base of the perianth, with long, exserted filaments, and versatile anthers. *Ovary* three-celled, with many ovules, and a long, straight style. *Capsules* woody, shining, protruding from the amentum, three-celled, three-valved, few-seeded. *Seeds* with a black testa. (Name from ξανθος, *yellow*, and ρεω, *to flow;* in allusion to the gum.)

1. **Xanthorrhœa australis** (Br. Prodr. 288); trunco arborescente (1–2-pedali?), foliis ancipitibus, scapo amento elongato breviore, bracteis fasciculos subtendentibus elongatis.—*Kunth, En.* iv. 649. (*Gunn,* 953.)

Hab. Northern coast of Tasmania: Rocky Cape to Detention River, and Asbestos Hills, *Gunn.*—(Fl. Oct., Nov.)

Distrib. Victoria.

Trunk, according to Gunn, never in Tasmania exceeding 2 feet high. *Leaves* 2–3 feet long, slightly scabrous. *Scapes* very variable in length, from a few inches to 4 feet high, robust. *Spikes* a foot or two long. *Flowers* opening first on the sunny side of the spike.—The aborigines used to eat the centre of the stem and bases of the young leaves, which have a nutty flavour, but are not palatable.

2. **Xanthorrhœa hastilis** (Br. Prodr. 288); trunco arboreo ramoso (6-pedali), foliis extra medium triquetris, scapo amentum longissimum vix æquante, bracteis perianthiisque imberbibus.—*Kunth, En.* iv. 649. (*Gunn, MSS.*, 630, *exempl. nullum.*)

HAB. Flinders' Island, *Gunn.*

DISTRIB. New South Wales and Victoria.

I have seen no Flinders' Island specimens of this plant, which has not yet been found on the mainland of Tasmania. According to Gunn, it attains about 6 feet in height, and is very irregularly branched; it yields a great quantity of resin.—*Scape* varying from 4–6 feet long.

3. **Xanthorrhœa minor** (Br. Prodr. 288); acaulis, foliis inferne ancipitibus ultra medium triquetris, junioribus antice concavis, scapis plurimis 1–3-pedalibus, amentis 4–10-uncialibus, bracteis fasciculos subtendentibus floribus æquantibus, omnibus perianthiisque imberbibus v. apicibus foliolorum parce pilosis. —*Kunth, En.* iv. 649. (*Gunn,* 764.)

HAB. Abundant; covering large tracts of ground near Yorktown and east of Georgetown; top of Grasstree Hill, near Hobarton.—(Fl. Dec.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

I refer this with some doubt to Brown's *X. minor*, the descriptions being insufficient to identify the plant. It is a small stemless species, which, unlike its Tasmanian congeners, sends up numerous flowering scapes from each head of leaves. Mr. Gunn further remarks that it appears to flower only occasionally, the flowers being abundant in one year, and very few having been found in the same place in the following season. It often covers the ground to the exclusion of everything else, and the country appears white from the abundance of its flowering stems.

Gen. XI. LAXMANNIA, *Br.*

Flores capitati, multibracteati. *Perianthium* 6-phyllum, persistens; foliolis basi conniventibus, exterioribus scariosis. *Stamina* 6; filamentis subulatis, glabris, foliolis perianthii insertis; *antheris* subrotundis, peltatis. *Ovarium* 3-loculare; *stylo* filiformi, cum ovario articulato; *stigmate* simplici; *ovulis* paucis, amphitropis. *Capsula* perianthio inclusa, 3-locularis, loculicide 3-valvis. *Semina* 1–2, peltata, umbilico nudo; *testa* atra, crustacea; *embryone* dorsali.—Herbæ *perennes, facie* Polycarpææ; radice *fibrosa;* caulibus *brevibus v. elongatis et ramosis, foliatis;* foliis *aceroso-filiformibus, confertis;* stipulis *basi vaginatis, vaginis ciliatis;* capitulo *pedunculato, multibracteato;* floribus *parvis, unibracteatis, albis purpureisve.*

A very remarkable genus, dissimilar in habit from any of the above. About ten species are known, all of them exclusively Australian except *L. minor*, and most of them inhabitants of the south-west quarter.—*Stems* tufted, short or elongate, wiry and much branched. *Leaves* all radical, or, in the branched species, collected in fascicles on the stems, linear, acerose or subulate, with scarious, often ciliated, membranous, silvery, stipulary sheaths at the base. *Flowers* in long scapes, densely capitate, surrounded by imbricating bracts; the bracts and outer leaflets of the perianth scarious. *Stamens* 6, inserted on the perianth; *filaments* subulate, glabrous; *anthers* small, versatile. *Ovary* three-celled, with few ovules, a straight slender style jointed on the ovary and simple stigma. *Capsule* three-celled, with few seeds; *testa* black.—The *L. minor* is a small, tufted plant, looking something like a matted grass, with numerous, slender, branching stems, bearing at intervals tufts of six to eight acerose, recurved leaves; these are $\frac{1}{2}$–$1\frac{1}{2}$ inch long, rigid, terete, acute, surrounded at the base by silvery, ciliate scales. *Heads of flowers* sessile in the tufts of leaves, very minute, with many scarious, ovate-lanceolate, sheathing bracts, the outer white and ciliated, often silvery, the inner longer, often purple. *Flowers* about $\frac{1}{8}$ inch long, variable in length, each with a sheathing, appressed bract. *Outer segments* of perianth ovate-oblong or oblong-lanceolate, hardly acute, but appearing acuminate from the involute margins, generally pale red-purple; inner leaflets much smaller, oblong, membranous. *Stamens* of outer series inserted at the base of the outer lesflets; of the inner, half-

way up the inner leaflets; all included, with very slender filaments and small yellow anthers. *Ovary* trigonous. (Named in honour of *E. Laxmann*, a Siberian traveller.)

1. **Laxmannia minor** (Br. Prodr. 286); caulibus dense cæspitosis tenuibus ramosis, foliis fasciculatis curvis acerosis (pollicaribus), stipulis longe ciliatis, capitulis sessilibus 6–8-floris, bracteis exterioribus subciliatis, interioribus plerisque margine integris, perianthii foliolis exterioribus scariosis lineari- v. oblongo-lanceolatis acutis involutis, interioribus lineari-oblongis obtusiusculis membranaceis exterioribus dimidio minoribus.—*Kunth, En.* iv. 642. (*Gunn*, 968.)

HAB. Heathy places: abundant in some of the north parts of the Colony, and at Georgetown, Circular Head, and Asbestos Hills, *Gunn*.—(Fl. Oct.)

DISTRIB. Victoria, *Robertson*; Swan River, *Drummond*.

Gen. XII. ASTELIA, *Banks et Sol.*

Flores sericei, polygamo-dioici, racemosi v. paniculati. *Perianthium* rotatum v. campanulatum, 6-partitum, patens. *Stamina* 6, in floribus fœmineis minimis castratis. *Ovarium* 3-gonum, 1–3-loculare; ovulis plurimis v. paucis, axillaribus parietalibusve; stylo erecto, apice trilobo v. 0; stigmatibus sessilibus. *Bacca* ovoidea v. globosa, carnosa, 1- v. 3-locularis. *Semina* pauca v. plurima; *testa* atra, crustacea, nitida; *albumine* carnoso; *embryone* brevi.—Herbæ *perennes*; radicibus *fibrosis*; foliis *elongatis, radicalibus subtrifariam imbricatis, longe vaginantibus, vaginis membranaceis, utrinque vel subtus villis argenteis sericeis furfuraceis paleaceisve compressis obtectis, basibus longissime dense villosis*; scapo *erecto, pariter villoso, apice ramoso.*

The plants comprised in *Astelia* and *Milligania* are so different from most *Liliaceæ*, that they may be regarded as a separate group, though whether entitled to rank as another Order or not must be a matter of doubt at present. Most of them resemble some *Melanthaceæ* in habit far more than they do any *Liliaceæ*, and some of them have separable styles, but others have a single terminal style; none have extrorse anthers, and all have black crustaceous integuments to the seed. *Astelia* consists of about ten species, chiefly natives of New Zealand (where most are large epiphytes), but some inhabit the Polynesian Islands, one Fuegia, and another the alps of Tasmania and Victoria, and one is confined to Tasmania. All are herbaceous plants, with thick fibrous roots, numerous narrow radical leaves, covered, as are all other parts in most of the species, with silvery, furfuraceous or woolly hairs; many are diœcious.—*Flowers* in panicles or branched racemes, generally green or yellowish, seldom conspicuous. *Perianth* of the male campanulate or rotate, deeply six-lobed, of the female rotate or urceolate, sometimes enclosing the fruit. *Stamens* six, inserted on the perianth, rudimentary in the female flower; *filaments* subulate or filiform; *anthers* linear or broad. *Ovary* one- or three-celled, with one three-lobed style, or three sessile stigmas. *Berry* globose or ovoid, one- or three-celled, with many or few parietal or axile seeds. (Name from αστελεχος, *wanting a stem.*)

1. **Astelia alpina** (Br. Prodr. 291); foliis linearibus lanceolatis ensiformibusve, panicula fœminea densa, mascula laxa, antheris filamentisque brevibus, ovario oblongo, stigmatibus 3 subsessilibus, placentis 3 parietalibus, ovulis plurimis, seminibus paucis breviter oblongis, testa lævi nitida.—*Hook. Bot. Misc.* i. *p.* 5. *t.* 3; *Kunth, En.* iii. 364. (*Gunn*, 762.)

HAB. Abundant on all the mountains, in wet places.—(Fl. Dec.)

DISTRIB. Alps of Victoria, *Mueller*.

The *A. alpina* forms dense matted tufts of silvery foliage on mountain bogs, etc.—*Leaves* very variable in size, length and breadth, and form, 4–14 inches long, lanceolate, ensiform, or linear, with densely silky, villous, membranous, sheathing bases. *Scapes* shorter than the leaves, erect, also densely silky with long soft hairs; female bearing short, dense, bracteate panicles of flowers; male panicle more lax and spreading. *Bracts* leafy. *Perianth*

six-parted. *Ovary* linear-oblong, with three very short stigmas and as many parietal placentæ, each with numerous ovules on slender curved funiculi. *Berry* ovoid, fleshy, $\frac{3}{4}$ inch long, bright red, with a few oblong, rounded, polished black seeds, sweetish, eatable, greedily devoured by birds.

2. **Astelia stylosa** (Mueller, MSS.); foliis anguste lanceolatis nervosis, panicula laxa ramosa, bracteis ovato-lanceolatis membranaceis, perianthii laciniis linearibus membranaceis glabris, bacca globosa, stylo gracile apice trifido, seminibus sub-6 reniformibus.

HAB. Mount Lapeyrouse, *Stuart.*

I have seen only a fragment of this very distinct species, sent by Dr. Mueller. It is at once distinguished from *A. alpina* by the small globose berry, with a straight, slender style.—*Leaves* $1\frac{1}{2}$ foot long, $1\frac{1}{2}$ inch broad, white beneath. *Scape* slender. *Berry* $\frac{1}{4}$–$\frac{1}{3}$ inch in diameter. *Seeds* about six, minute, shining and black.

Gen. XIII. MILLIGANIA, *H.f.*

Perianthium persistens, patens, fere ad basin hemisphæricum, 6- (rarius 5–7-)partitum, segmentis imbricatis. *Stamina* 6, parva, segmentis inserta; *filamentis* brevibus, subulatis; *antheris* introrsis, versatilibus, 2-locularibus, polline subgloboso. *Ovarium* oblongum, basi perianthio immersum et eo adhærens, 3-loculare. *Styli* 3, discreti, subulati, recurvi; *stigmata* punctiformia; *ovula* plurima, angulo interiori affixa, ascendentia, anatropa. *Capsula* oblonga, obtusa, profunde triloba, chartaceo-membranacea, ad medium tripartibilis, loculis (stylis fissis terminatis) superne breviter loculicide dehiscentibus. *Semina* plurima v. abortu pauca, ascendentia, linearia, curva; *testa* crustacea, atra, nitida, utrinque subcarunculata v. apice appendiculata; *endopleura* membranacea; *albumine* carnoso; *embryone* tereti, axillari.—Herbæ *elatæ cæspitosæ Tasmanicæ, facie* Asteliæ, *sericeæ v. villosæ;* radice *fibrosa, fibris crassis;* foliis *lineari-ensiformibus, siccis coriaceis;* scapo *paniculato, ramoso, bracteato;* floribus *pedicellatis, mediocribus, albis, bracteolatis;* capsula *Anguillariæ.*

This curious genus is apparently intermediate between *Liliaceæ* and *Melanthaceæ*, differing from the former in the three separate styles, and the partially tripartible capsule, and from the latter in the more important characters of versatile introrse anthers, and few linear seeds covered with a black brittle testa. Its general appearance is very similar to *Astelia*, and it further agrees with that genus in the nature of the silky wool, the very coriaceous foliage, the hemispherical base of the perianth, oblong capsule, and especially in the long seed. It differs from that genus in the structure and dehiscence of the capsule, which resembles in form, etc., that of *Anguillaria*. So much diversity exists however in the form, placentation, and dehiscence of the fruit in *Astelia*, that much stress cannot be laid upon that organ; and though the affinities of both *Milligania* and *Astelia* are so obscure, I regard them as nearly allied to one another, and both as members of the *Asphodeleæ*. (Named in honour of *Dr. Joseph Milligan*, Secretary of the Tasmanian Philosophical Society.)

1. **Milligania longifolia** (Nob. in Hook. Kew Journ. Bot. v. 296. t. 9); foliis elongato-linearibus subgramineis basi parce villosis, panicula laxa effusa ramis gracilibus, bracteis bracteolisque membranaceis linearibus lineari-lanceolatisve. (*Gunn*, 1388.)

HAB. Franklin River, under shade of Huon Pines, *Gunn;* crevices of limestone cliffs, Gordon's River, Macquarrie Harbour, *Milligan.*—(Fl. Dec., Feb.)

Mr. Gunn, who discovered this genus and species, states that it grew in company with some of the most peculiar plants of Tasmania, Huon Pine, *Anopterus glandulosa*, *Cenarrenes nitida*, and *Richea pandanifolia*, all of which are typical of a most humid atmosphere. It so much resembles large specimens of *Astelia alpina* in habit and general appearance, that its discoverer took it for that plant; and he adds that the specimens were nearly three months drying, between papers that were daily changed.—*Plants* apparently growing in dense large tufts, with long, pendulous, spreading foliage, and erect scapes. *Roots* of stout, simple fibres. *Stems* of large plants nearly 2 inches in

diameter at the base, formed of the sheathing bases of the leaves, which are surrounded by the fibres of decayed foliage. *Leaves* shorter or longer than the scape, 1–3 feet long, ½–2 inches broad, linear, gradually tapering at the top to a long point, grassy-green, ribbed when dry, more or less silky or villous towards the base and along the midrib. *Scape* villous, 1–2 feet high, branched above the middle, bearing below that one or two narrow, linear-subulate, amplexicaul leaves. *Panicle* bracteate at the axils; *bracteæ* lanceolate or linear-lanceolate, generally elongate; *branches* slender, spreading; *pedicels* slender, cernuous, covered with silky wool, bearing small, linear, membranous bracteolæ at the base. *Flowers* ⅓ inch broad, white, not jointed on to the pedicel. *Perianth* entire and cup-shaped at the base, then divided into six (rarely five or seven) linear-oblong, blunt lobes, that are imbricate and somewhat involute in æstivation. *Stamens* small, inserted at the base of the segments; *filaments* subulate. *Anthers* small, versatile, two-lobed. *Ovary* sunk in the base of the perianth, and adherent at its base with it, oblong, three-lobed, with three subulate recurved stigmas, three-celled, with many axile, ascending ovules. *Capsule* oblong, membranous, three-lobed, three-celled, dehiscing to the middle down the axis, each cell splitting at the summit only, the divisions crowned by the persistent styles, which are also split in halves. *Seeds* few or many, linear, ascending, covered with a brittle, black, shining testa, that is contracted at either end of the seed. In small specimens the leaves are a span long, and ¼–½ inch broad.

2. **Milligania densiflora** (Nob. in Hook. Kew Journ. Bot. l. c. p. 298); foliis coriaceis patulis e basi lata vaginante gradatim angustatis acuminatis late subulato-lanceolatis lineari-subulatisve sparse sericeo-pilosis, scapo robusto sericeo-villoso, bracteis ovato-lanceolatis concavis longe acuminatis infima basi longe amplexicauli vaginante, vagina integra membranacea, panicula ovata densiflora ramis ramulisque robustis.

HAB. Mount Sorrell, Macquarrie Harbour, *Dr. Milligan.*—(Fl. Dec.)

A very different-looking plant from the preceding, with much shorter, more coriaceous foliage, sheathing lower bracts, robust scape, broader bractlets, and dense panicle.—*Leaves* coriaceous, 8–10 inches long, gradually tapering from a broad, sheathing base, 1–1½ inch broad, to an acuminate point, sparingly covered with silky hairs. *Scape* woolly with silky hairs, robust, with one or two large, ovate, concave, leafy bracts, that have long, entire, amplexicaul sheaths and tapering apices. *Panicle* 1–6 inches long; *branches* short, with concave leafy bracts; *flowers* crowded, ½ inch across, white.

NAT. ORD. XII. JUNCEÆ.

Following Brown and Lindley, I have brought *Xerotes* under this Order, which, like most others of Monocotyledones of any extent, comprehends plants of very various habits and appearance. All agree in their six-parted perianth, which is generally scarious or coriaceous, and brown or green, but it is coloured and petaloid in some genera, and highly coloured and scarious in *Calectasia*. Of *Junceæ* proper there are about twenty-five Australian species, most of them having very wide ranges, and few being confined to Australia and Tasmania; on the other hand, *Xerotes* is a remarkably local genus of plants.

Gen. I. XEROTES, *Br.*

Flores dioici. *Perianthium* 6-partitum, viride v. subcoloratum. MASC. *Foliola* interiora v. omnia basi cohærentia. *Stamina* 6, perianthio inserta; *antheris* peltatis. *Pistilli* rudimentum. FŒM. *Perianthii* foliola distincta, persistentia. *Stamina* cassa. *Ovarium* 3-loculare; *stylis* 3, basi connatis; *ovulis* loculis solitariis. *Capsula* coriacea, v. subbaccata, corticata, 3-locularis, loculicide 3-valvis. *Semina* peltata; *testa* membranacea, interdum laxa et axillæformi; *albumine* cartilagineo; *embryone* recto.—Herbæ *rigidæ, aridæ, perennes, habitu variæ;* radice *fibrosa;* caule *nullo v. rarius elongato, folioso, ramoso;* foliis *plerisque radicalibus, linearibus, planis cylindraceisve, basibus scariosis, semivaginantibus;* scapis *rigidis, simplicibus ramosisve;* inflorescentia *varia, capitata, spicata, racemosa v. paniculata;* floribus *parvis, sessilibus pedicellatisve;* bracteis *scariosis.*

A very remarkable genus, consisting of upwards of fifty species, all confined to Australia and Tasmania, and almost without exception confined in their ranges to the south-eastern or south-western quarters, scarcely any even of the south-coast species ranging from Victoria to Swan River. The species present great diversity in habit, but all are singularly dry, rigid, cyperaceous-looking plants, with fibrous roots, and almost invariably radical leaves, the stems being very short.—*Leaves* flat or terete, usually very long and rigid. *Flowers* sometimes in sessile heads, but usually in branched panicles, racemes, or spikes, sometimes densely capitate, often in dense clusters on the branches of the panicle. *Flowers* diœcious, generally greenish-white. *Perianth* six-parted; leaflets of the male flowers more or less cohering at the base, those of the female distinct, persistent. *Stamens* six, inserted on the perianth; *anthers* peltate. *Ovary* three-celled, cells one-ovuled. *Capsule* coriaceous, three-valved. *Seeds* with a membranous, pale testa. (Name from ξηροτης, *dryness*.)

1. **Xerotes longifolia** (Br. Prodr. 263); acaulis, foliis lineari-elongatis rigidis strictis apice bilobis eroso-dentatis, scapo ancipiti, panicula lanceolata ramis oppositis basi longibracteatis, floribus nodoso-glomerulatis sessilibus.—*Kunth, En.* iii. 374; *Lindl. Bot. Reg.* 1839. *t.* 3. Lomandra longifolia, *Lab. Nov. Holl.* i. *p.* 92. *t.* 119. (*Gunn,* 336.)

HAB. Abundant in dry and moist ground throughout the Colony.—(Fl. Oct.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

A harsh, cyperaceous-looking plant.—*Leaves* 2 feet long, very rigid, linear, variously cut or truncate at the top. *Scape* erect, flattened, stout, 6–12 inches high. *Inflorescence* panicled; *branches* opposite, the lower sometimes whorled, with long, subulate-lanceolate, spreading bracts at the base. *Flowers* small, sessile in glomeruli on the branches of the panicle, subtended by spreading, subulate bracts.

2. **Xerotes glauca** (Br. Prodr. 260); caule brevi basi ramoso, ramis brevibus, foliis angustissime linearibus strictis scaberulis apice tabescente obtuso, vaginis laceris, scapo simplici, floribus fœmineis capitatis, masculis glomeratis, glomerulis in spicam elongatam dispositis.—*Kunth, En.* iii. 372; *Sieb. Plant. Exsicc.* 433, 488. (*Gunn,* 93.)

HAB. Abundant in gravelly soil near Penquite, and at Norfolk Plains, etc., *Archer, Gunn.*—(Fl. Nov.)

DISTRIB. New South Wales and Victoria.

A small, rigid species, 4–8 inches high, with a short, stout, much-branched stem, and long, very narrow, linear leaves, scaberulous to the touch, with blunt, brown tips.—*Scapes* short. *Female flowers* in a solitary, globose, almost sessile head; males forming sessile glomeruli on an elongated, interrupted spike.

Gen. II. JUNCUS, *L.*

Flores plerumque congesti, paniculati v. capitati. *Perianthium* coriaceum v. glumaceum, 6-partitum, 2-bracteatum. *Stamina* 6 v. 3, basi perianthio inserta; *filamentis* planis; *antheris* linearibus. *Ovarium* prismaticum, 1–3-loculare; *stylo* brevi; *stigmatibus* 3, elongatis. *Capsula* prismatica, perianthio inclusa, 3- rarius 1-locularis, loculicide 3-valvis. *Semina* plurima, ascendentia v. erecta; *testa* membranacea, interdum laxa v. utrinque producta, pallida.—Herbæ *erectæ, annuæ v. rhizomate perenni, repente, squamoso;* culmis *annuis, teretibus, basi foliosis v. aphyllis;* foliis *glabris, teretibus v. rarius planis v. adversis, intus continuis v. nodoso-articulatis;* floribus *viridibus brunneisve.*

A cosmopolitan genus, many of the species also being widely spread, of which the common English Rushes, *Juncus communis, bufonius,* and *maritimus,* all found in Australia and New Zealand, are examples. About twenty Australian species are known, most of which are temperate, and common to the east and west coasts, and to Tasmania and other parts of the world. The species vary much in habit, being leafless or leafy, with the leaves terete, compressed, or quite flat.—*Culms* erect, bearing branched panicles or heads, or corymbs of inconspicuous, small, green or brown flowers. *Perianth* of six coriaceous or glumaceous leaflets. *Stamens* six, rarely three. *Ovary*

trigonous, three- (rarely one-) celled, with many axile ovules, a short style, and three long stigmas. *Capsule* small, brown, polished, three-angled, with many pale seeds with a membranous testa. (Name from *jungo*, to join; the leaves having been woven into cordage.)

§ 1. *Culms leafy at the base. Leaves all radical, or nearly so, quite flat, or with involute margins.*

1. **Juncus planifolius** (Br. Prodr. 259); annuus, radice fibrosa, culmo nudo, foliis omnibus radicalibus numerosis planis, inflorescentia terminali dense capitata v. floribus glomeratis, glomerulis cymoso-paniculatis, staminibus 3, capsulis prismaticis mucronatis perianthio brevioribus longioribusve, seminibus striolatis ovoideis, testa lævi.—*Fl. N. Zeal.* i. 263; *Fl. Antarct.* 358, *and Suppl.* 545. (*Gunn*, 970, 1441.) Variat insigniter inflorescentia et statura.

HAB. Abundant in pastures, etc., throughout the Island.—(Fl. Oct.–Dec.) (*v. v.*)

DISTRIB. Throughout extratropical Australia, New Zealand, Lord Auckland's Island, and South Chili.

Very variable in size and in the inflorescence, of which the flowers form sometimes a dense solitary capitulum, or are collected in glomeruli on a dichotomously-branched panicle. The numerous soft, broad, flat, radical leaves, annual fibrous root, naked, simple culm, and three stamens, abundantly distinguish the species.

2. **Juncus cæspititius** (E. Meyer, in Plant. Preiss. ii. 47, and Linnæa, xxvi. 244); annuus, radice fibrosa, foliis omnibus radicalibus angustis planis marginibus involutis, scapo gracili, floribus glomerulatis, glomerulis 1–5 lateralibus pedunculatis v. omnibus cymosis, perianthii foliolis exterioribus acuminatis capsulam ellipticam acutam subæquantibus, staminibus 6. (*Gunn*, 971.)

HAB. Northern parts of the Island: Circular Head, *Gunn*.—(Fl. Dec.)

DISTRIB. Victoria and Swan River.

Very similar indeed to small states of *planifolius*, of which it may prove a variety, but the leaves are narrower, and have involute margins, and the stamens are six in number.

3. **Juncus falcatus** (E. Meyer, in Reliq. Hænk. i. 144; Linnæa, xxvi. 245); rhizomate repente perennante, culmis basi foliatis medio unifoliatis v. aphyllis, foliis rigidis anguste linearibus planis v. marginibus involutis, capitulis solitariis terminalibus globosis, perianthii foliolis acutis capsulam late obovatam obtusam æquantibus, staminibus 6, seminibus lineari-oblongis, testa striata utrinque breviter producta. (*Gunn*, 339.)

HAB. Wet places in the mountains, as at Arthur's Lakes, Lake St. Clair, etc., *Gunn*, *Archer*.—(Fl. Jan., Feb.)

DISTRIB. Alps of Victoria, *Mueller;* Unalashka and California (*fid. E. Meyer*).

A most distinct species, a span to a foot high, at once distinguished from its flat-leaved congeners by its creeping perennial rhizomes, solitary capitula of rather large flowers, large, obovate, blunt, black-brown capsule, striate seeds, with the testa produced beyond either end, and six stamens.

4. **Juncus bufonius** (Linn. Sp. Pl. 466); annuus, humilis, radice fibrosa, culmis numerosissimis foliosis, foliis radicalibus et caulinis lineari-setaceis marginibus involutis v. antice sulcatis, cyma terminali laxe dichotome ramosa, ramis tenuibus gracilibus, floribus 1–3-aggregatis majusculis pallidis, perianthii foliolis acutissimis capsulam lineari-prismaticam acutam superantibus, staminibus 6, seminibus ovato-globosis, testa lævi pallida nitida.—*Fl. N. Zeal.* i. 264; *E. Meyer, in Plant. Preiss.* ii. 47. Juncus plebejus, *Br. Prodr.* 239. (*Gunn*, 1495, 583.)

HAB. Abundant in moist places throughout the Colony.—(Fl. all the year.) (*v. v.*)

DISTRIB. Throughout Europe and Northern Asia, North America, New Zealand, and temperate Australia.

A small pale-coloured species, with fibrous roots, sending up very many slender, leafy culms, 1–6 inches high. —*Leaves* linear-subulate, with large sheaths. *Culms* much branched; branches very slender, dichotomous, bearing solitary flowers or clusters of two or three. *Perianth* of very narrow, acuminate leaflets. *Stamens* six; sometimes a few are imperfect. *Capsule* shorter than the perianth, linear-obovate.

5. **Juncus revolutus** (Br. Prodr. 259); rhizomate repente perenni, foliis radicalibus plurimis caulinis solitariis v. 0, omnibus anguste linearibus rigidis planis marginibus basi tenuiter incurvis superne recurvis v. planis supra lævibus subtus striatis, culmo gracili angulato, floribus solitariis binisve, ramis corymbi parce divisi sessilibus pallidis, bracteolis membranaceis brevibus obtusis, perianthii foliolis acuminatis capsulam obovatam retusam superantibus, staminibus 6, seminibus parvis pallidis, testa lævi.— *E. Meyer, in Linnæa,* xxvi. 245. J. Brownii, *F. Mueller, MSS.* (*Gunn,* 977.)

Hab. Tasmania, near the sea: Georgetown, etc., *Gunn.*—(Fl. Dec.)

Distrib. Alps of Victoria, *Mueller.*

I have described this most distinct species from Mueller's specimens, as well as from Tasmanian, which are much smaller, with fewer flowers. It is very similar in many respects to *J. falcatus*, especially in the creeping rhizome, and small states resemble *J. bufonius*, but the leaves are very peculiar, being narrow-linear, rigid, quite flat, with the margins narrowly recurved above, and incurved below, the upper surface is quite even, the under striate. *Culm* compressed or angled, with usually one leaf about the middle. *Cyme* of two or three unequal branches, bearing at intervals solitary flowers, or two or three together; these are rather large, very pale, with acuminate leaflets of the perianth, which are longer than the blunt capsule.

§ 2. *Culms leafy, branched, annual. Leaves terete, or laterally compressed.*

6. **Juncus capillaceus** (Nob. in Fl. N. Zeal. i. 265); pusillus, culmis gracilibus cæspitosis repentibus ramosis, foliis setaceis teretibus solidis continuis v. intus nodosis culmum gracilem superantibus, floribus solitariis v. paucis congestis sessilibus v. breviter pedicellatis bibracteatis, bractea interiore membranacea brevi exteriore (culmi apice) flores superante, perianthiis floriferis subacutis fructiferis acuminatis capsula elliptica rostrata membranacea 1-loculare brevioribus, staminibus 6 elongatis, seminibus subglobosis politis nitidis. — J. prismatocarpus, β alpinus, *Mueller, MSS.* (*Gunn,* 1414, 1419.) (Tab. CXXXIV. *B.*)

Hab. Alpine marshes: Arthur's Lakes, *Gunn;* Cuming's Head, *Archer;* Coal River tier, near Richmond, *Oldfield.*—(Fl. Dec., Jan.)

Distrib. Alps of Victoria, elev. 5–6000 ped., *Mueller;* New Zealand, *Colenso.*

A very small, extremely slender, tufted, annual species, with much-branched rhizomes, creeping at the base.— *Culms* filiform, 2–3 inches high. *Leaves* attenuate, very slender, subulate, longer than the culm. *Inflorescence* almost capitate, very small, of one to six minute flowers near the apex of the culm, subtended by two opposite bracts, of which one is the apex of the culm produced beyond the flowers, and the other is more membranous and very short. *Capsule* rostrate, longer than the perianth.—Plate CXXXIV. *B.* Fig. 1, fruit in perianth; 2, outer sepal and stamen; 3, inner sepal and stamen; 4, capsule; 5, valve of ditto, and seeds; 6, seed; 7, vertical section of ditto:—*all magnified.*

7. **Juncus Holoschœnus** (Br. Brodr. 259); rhizomate perenni repente, culmis foliosis, foliis et involucro monophyllo lateraliter compressis intus nodoso-articulatis, floribus glomerulatis, glomerulis in cymam terminalem v. lateralem parce ramosam dispositis, perianthiis acuminatis capsulam prismaticam acuminatam 1-locularem æquantibus, staminibus 6, seminibus lineari-oblongis profunde striatis et transverse rugosis, testa utrinque breviter producta.—J. cephalotes, *Fl. N. Zeal.* i. 263, *an Thunb.? Prodr.* 66. (*Gunn,* 415.)

Hab. Abundant in marshy places throughout the Island.—(Fl. all summer.) (*v. v.*)

Distrib. Throughout extratropical Australia; New Zealand; North and South Africa? Sardinia? North America? India?

A very common plant, easily recognized from its Tasmanian allies by its short, creeping rhizome; tall, stout, leafy culms, 1–2 feet high; articulate, laterally compressed leaves; long leaf-like involucre; and branched cyme bearing heads of flowers. Small states have the leaves grassy and hardly articulate.—*Perianths* acuminate. *Capsule* acuminate, one-celled.

§ 3. *Rhizomes perennial, creeping. Leaves terete or none. Inflorescence lateral.*

8. **Juncus maritimus** (Lamk. Encyc. Bot. iii. 264); elatus, culmo nudo foliisque radicalibus teretibus, panicula laterali corymbosa, ramis umbellatis, floribus glomeratis, perianthii foliolis exterioribus acutis capsulam oblongam obtusam æquantibus, staminibus 6, seminibus oblongis angulatis, testa utrinque laxa.—*Br. Prodr.* 258; *Kunth, En.* iii. 322; *E. Meyer, in Plant. Preiss.* ii. 46; *Fl. N. Zeal.* i. 262. (*Gunn*, 980.)

Hab. Common in salt and brackish marshes, sometimes on moist sand-hills.—(Fl. Dec.) (*v. v.*)

Distrib. Extratropical Australia, New Zealand, Europe and temperate Asia, North and South Africa, and North and South America.

A tall, coarse Rush, the largest in Tasmania except *J. vaginatus*, from which it is at once distinguished by the glomerate flowers, and long, terete, pungent leaves at the base of the culm.—*Rhizome* very stout, creeping. *Sheath* of leaves red-brown. *Culms* 2–3 feet high, more slender in drier places than in moist. *Inflorescence* rather crowded, lateral, dark brown. *Flowers* small. *Capsules* blunt, about as long as the perianth, dark brown, as are the ripe seeds. *Stamens* 6.

9. **Juncus australis** (Hook. fil.); culmo nudo tereti gracili basi vaginato, vaginis obtusis acuminatisve, panicula pallida laterali globosa densiflora v. ramis elongatis paucis glomerulas dense congestas gerentibus, perianthiis acuminatis capsulam sub-1-locularem obovatam pallidam subæquantibus, staminibus 3, seminibus oblongis, testa pallida lævi utrinque producta. (*Gunn*, 566, 567, 568.) (Tab. CXXXIV. *A.*)

Hab. Common in various parts of the Island.—(Fl. Nov.) (*v. v.*)

Distrib. Victoria and Swan River, New Zealand.

A slender species as compared with *J. maritimus* and *vaginatus*, the culms being about as thick as those of *J. communis*, from which it differs in the dense inflorescence, very acuminate perianth, and three stamens. The whole plant, culms, flowers, capsule, and seeds, are of a pale colour, but not so white as *J. pallidus.*—*Flowers* sometimes collected into a solitary, dense, globose capitulum; in other cases the panicle branches a little, and bears dense masses of glomeruli. The Australian specimens have the sheaths at the bases of the culms long and attenuate, acuminate. I have only one very small Tasmanian specimen with rhizome and bases of culms, in which the sheaths are short and blunt, probably from not being fully developed; my numerous other Tasmanian specimens have unfortunately been collected without the rhizome and base of the culm. The plant above described differs from Brown's characters of *J. pallidus*, in the flowers being far too much crowded to be called alternate and subimbricate, and though the inflorescence is much looser in the Australian specimens, from the lengthening of the branches of the panicle, the flowers are even more densely glomerate than in *J. maritimus.*—Plate CXXXIV. *A.* Fig. 1, flower; 2, outer sepal; 3, inner ditto; 4, stamen; 5, ovary; 6, capsule in perianth; 7, ditto, removed; 8, valve of ditto, and seed; 9, seed; 10, vertical section of seed:—*all magnified.*

10. **Juncus pallidus** (Br. Prodr. 258, non Kunth, etc.); elatus, culmo nudo basi foliis longe vaginatis tecto, vaginis interdum folia brevia teretia gerentibus?, panicula laterali albida ramosa, ramis inæqualibus, ramulis congestis, floribus alternis subimbricatis majusculis, perianthiis acutis capsula pallida ovali

1-loculari brevioribus, staminibus 6, seminibus linearibus, testa laxe utrinque producta.—*An var.* J. vaginati? (*Gunn*, 569?, 570.)

Hab. Launceston, etc., *Lawrence*, *Gunn*.

Distrib. Southern coast of Australia.

I take this to be Brown's *J. pallidus*, from its singularly pale colour, the crowded branchlets of the panicle, alternate flowers, and oval capsule longer than the perianth. It may be a small state of *J. vaginatus*, but is not the *J. pallidus* of Kunth and E. Meyer, which I refer to *J. communis*. The *J. pallidus* is of the size and habit of *J. maritimus*, but has almost white inflorescence; much shorter leaves at the bases of the culm, or none; and alternate, not glomerate flowers of a larger size; the capsule too is quite different, and the seeds are narrower, with the testa much more produced at either end.

11. **Juncus communis** (E. Meyer, Junc. 12); culmo tereti gracili nudo, vaginis aphyllis v. folia breviter teretia gerentibus, panicula pallida laterali effusa v. densa, ramis gracilibus, floribus distinctis, perianthiis acutis capsulam obovatam obtusam subæquantibus, staminibus 3, seminibus lineari-oblongis, testa lævi utrinque laxa.—*Kunth, En. Plant.* iii. 320. J. effusus, *Br. Prodr.* 259; *Fl. N. Zeal.* i. 263. J. pallidus, *Kunth, non Br.* (*Gunn*, 571, 1390.)

Hab. Abundant in stiff moist soil throughout the Colony.—(Fl. all summer.) (*v. v.*)

Distrib. Australia, New Zealand, and in most temperate parts of the world.

The common Australian form of this widely-diffused plant is slender and tufted, 2 feet high, with an effuse panicle of few branches, bearing few distinct flowers; the sheaths usually bear slender, terete leaves, but often do not, and the panicle is of a pale colour. The form with a dense inflorescence (*J. conglomeratus*, Linn.) is not common in Australia.—The *J. communis* is so variable that it is often difficult to distinguish it from its allies, but it differs from *J. maritimus* and *J. australis* by its slenderness and distinct flowers; from *J. pallidus* by its slender form and three stamens, and by its more obovate, shorter capsule; from *J. vaginatus* by its very much smaller size, the absence of great sheaths at the base of the culms, and by its three stamens; from *J. Gunnii* by its pale flowers and less acuminate perianth; from *J. pauciflorus* it is not distinguishable except by size, and its three stamens, and shorter, blunter capsule.

12. **Juncus pauciflorus** (Br. Prodr. 259); culmo aphyllo tereti filiformi nudo basi vaginato, panicula laterali pauciflora, ramis filiformibus, floribus distantibus, perianthiis acutis capsula ovali pallida 1-loculari brevioribus, staminibus 6, seminibus oblongis, testa utrinque breviter laxa.—*Kunth, En.* iii. 320. (*Gunn*, 566, 961.)

Hab. Abundant throughout the Colony.—(Fl. all summer.) (*v. v.*)

Distrib. New South Wales and south coast, *Brown*.

I have seen no Australian specimens of this very elegant species, which may be recognized at once by its slender filiform culms, 1½ foot high, densely tufted with very short, red-brown sheaths at the base, by the lateral panicle of few, very slender, few-flowered branches, by the small flowers, acute, brownish perianth, ovoid capsule, and six stamens. The culms are much more slender than any form of *J. communis*, and scarcely stouter than pack-thread.

13. **Juncus Gunnii** (Hook. fil.); culmis nudis gracilibus subfiliformibus aphyllis basi vaginatis, panicula parva laterali ramosa brevi brunnea dense congesta v. ramis elongatis distinctis, floribus parvis aggregatis, perianthiis acuminatis capsula obovata brunnea longioribus, staminibus 6, seminibus?. (*Gunn*, 572, 973.)

Hab. Tasmania, probably common, as no habitat is given, *Gunn*.—(Fl. Nov.)

Apparently a very distinct species, almost as slender as *J. pauciflorus*, which it a good deal resembles, but the

panicle is very different, ½–1 inch long, dark brown, much branched, the branches somewhat fascicled, and the flowers clustered and smaller; the capsule is dark brown, and considerably shorter than the perianth.

14. **Juncus vaginatus** (Br. Prodr. 258); robustus, elatus, aphyllus, culmis teretibus nudis basi laxe vaginatis, vaginis obtusis, panicula alba laterali effusa erecta ramosa multiflora, ramulis subfastigiatis, floribus majusculis distinctis, perianthiis acutis capsulam pallidam obovato-ellipticam obtusam subæquantibus, staminibus 6, seminibus testa utrinque laxa.—*Kunth, En.* iii. 319; *E. Meyer, in Plant. Preiss.* ii. 46; *Fl. N. Zeal.* i. 262. (*Gunn,* 570?, 569.)

HAB. Common in many parts of the Colony, both in the north and south.—(Fl. Dec.) (*v. v.*)

DISTRIB. Extratropical Australia and New Zealand.

Much the largest of the Tasmanian species, and one of the most robust of the genus.—*Culms* erect, 3–5 feet high, sometimes as thick as the little finger, conspicuous for the loosely sheathing, blunt vaginæ at the base. *Panicle* very much divided, erect, white, 2–4 inches long. *Flowers* very numerous, distinct, white or very pale, large for the genus. *Perianth* as long as the ovoid, blunt capsule. The plant I have considered to be Brown's *J. pallidus* may be a small variety of this, with a longer capsule.

Gen. III. LUZULA, *DC.*

Flores Junci, sed ovario ovulis 3, et capsula 1-loculari 3-sperma.—Herbæ; foliis *planis, pilosis glabratisve;* scapis *gracilibus;* floribus *glumaceis;* bracteis *plerisque ciliatis.*

Luzula is distinguished from *Juncus* chiefly by the one-celled, three-seeded ovary and capsule; the species are numerous in Europe, and especially mountain and arctic regions, and several are also found in the southern temperate hemisphere. The leaves are flat, grassy, and generally ciliated, in which respect the genus further differs from *Juncus.* (Name of doubtful derivation.)

1. **Luzula campestris** (DC. Fl. Franc. iii. 161); foliis laxe ciliatis, culmis gracilibus, capitulis globosis ovatisve solitariis vel subumbellatis inæqualiter pedunculatis, bracteis scariosis, perianthiis acuminatis, capsulis obtusis.—*Br. Prodr. Addend.; Fl. N. Zeal.* (*Gunn,* 598, 1440, 340, 341.) Variat mirifice statura, indumento, inflorescentia florumque magnitudine et colore.

HAB. Abundant in pastures throughout the Island, ascending to 3000 feet.—(Fl. Aug.–Nov.) (*v. v.*)

DISTRIB. Throughout extratropical Australia, New Zealand, and temperate and arctic Europe, Asia, and America.

The *Luzula campestris,* an extremely common and variable European species, is no less so in Australia, Tasmania, and New Zealand. It is a small, herbaceous, perennial-rooted plant, 4 inches to a foot high, with numerous, grassy, flat, spreading radical leaves, ciliated abundantly with long hairs, sometimes woolly, and a long, slender, leafy scape, bearing one or many heads of flowers arranged in capitula or umbels, with long or short spreading branches.—*Capitula* varying in size from a pea to a marble, subtended by leafy bracts. *Flowers* small, sessile, brown, or whitish, or green, with brown margins to the leaflets, closely surrounded with scarious, ciliated bracts. *Flowers* of the same structure as *Juncus,* but the style is generally longer; the ovary is one-celled, with three erect ovules. *Capsule* three-valved, one-celled, three-seeded.

2. **Luzula Oldfieldii** (Hook. fil.); foliis late linearibus longe ciliatis, capitulis in capitulum densum ovatum sessile congestis, involucris brevibus, bracteis sublaceris, perianthiis acuminatis brunneis late albomarginatis integerrimis.

HAB. Wet places on the summit of Mount Wellington, *Oldfield.*—(Fl. Jan.)

Very different in size, robustness, and habit, from any of the varieties of *L. campestris,* and with the inflorescence forming a dense, short, lobed, ovoid or globose, terminal, sessile head, subtended by short involucral leaves.

Leaves quite flat, ½ an inch broad. This is nearly allied to the *L. crinita* of Lord Auckland's Islands, but in that the perianth-leaflets are narrower and dark brown, the bracteæ deeply laciniate and ciliated, and the leaves narrower. The *L. Alopecurus*, Desv., of Fuegia, is a third closely allied and extremely similar species, but that has a ciliated perianth. The *L. Oldfieldii* is much nearer *L. campestris* than any of the above.

Nat. Ord. XIII. XYRIDEÆ.

Gen. I. XYRIS, *L.*

Flores in capitulum solitarium terminale dense spicati; squamis capituli persistentibus, coriaceis, dense imbricatis. *Perianthium* duplex; *exterius* glumaceum, foliolis 3, exteriore calyptræformi v. cucullato caduco; lateralibus navicularibus; *interius* corollinum foliolis 3 longe unguiculatis, lamina lobata. *Stamina* 3, fertilia unguibus perianthii interioris inserta, cum staminodiis 3 hypogynis apice plumosis alternantia, antheris extrorsis. *Ovarium* 1-loculare, v. basi 3-loculare; *ovulis* numerosis, ascendentibus, placentis 3 basilaribus v. subparietalibus affixis; *stylo* gracili, trifido; *stigmatibus* plumosis indivisisve. *Capsula* 1–3-locularis, 3-valvis, polysperma. *Semina* erecta, subglobosa; *testa* coriacea; *albumine* carnoso; *embryone* minimo.—Herbæ *scapigeræ;* foliis *equitantibus, ensiformibus v. filiformibus, strictis tortisve;* scapo *basi* 1-*vaginato, superne nudo, stricto, tereti v. compresso v. angulato;* capitulo *solitario, squamis fuscis;* perianthio *interiore flavo.*

A large genus, almost the only one of the Order, abundant in tropical and extratropical Australia, and in tropical America; comparatively rarer in tropical Asia and Africa. About twenty Australian species are known to me, for the most part natives of the south-western quarter of the continent; few or none seem to be common to this and the eastern quarters, but the species are difficult of discrimination, and the majority have not been studied.—Tufted herbs, with no stems, or short ones, fibrous roots, equitant, generally rigid, flat or terete, strict or twisted leaves, and slender, strict, erect scapes, bearing solitary, terminal, brown capitula of densely imbricating, coriaceous scales. The flowers are sessile and solitary in these scales, one or two open at a time, the three yellow-lobed petals alone appearing on the surface of the capitulum.—*Perianth* of six pieces; outer glumaceous, of three rigid brown scales, the lateral persistent, erect, and navicular, the front one hooded and concave or calyptrate, is carried up by the inner, and falls away; inner of three petaloid, clawed, yellow pieces, each bearing a short stamen, with extrorse anther on the claw; three filiform staminodia, with plumose apices, alternate with the inner perianth-segments. *Ovary* small, one-celled, or partly three-celled, with a slender, trifid style, and simple or plumose stigmas. *Capsule* thickened at the top, with numerous erect seeds, attached to three basal, more or less confluent placentæ. (Name from ξυρος, *sharp;* in allusion to the foliage of some species.)

1. **Xyris operculata** (Lab. Nov. Holl. i. p. 14*. t. x.); foliis teretiusculis filiformibus, culmo tereti, capitulo ovoideo v. obovoideo, squamis quinquefariis coriaceis obtusis imberbibus inferioribus minoribus vacuis, stigmatibus multifidis?, capsula apice triloba granulata semitriloculari, placentis basi unitis.—*Br. Prodr.* 257; *Bot. Mag. t.* 1158. (*Gunn,* 334.)

Hab. Common in wet heaths and peat soils.—(Fl. Dec.–Feb.) (*v. v.*)

Distrib. New South Wales and Victoria.

Plant forming large, coarse tufts of rigid foliage, and slender, terete scapes, 1–3 feet long.—*Leaves* slender, with very shining brown sheathing bases. *Scapes* slightly twisted. *Capitulum* ⅓–⅔ inch long. *Lateral scales* of the outer perianth ciliate or bearded. *Flowers* sweet-scented.—I have not seen ripe fruit.

2. **Xyris gracilis** (Br. Prodr. 256); foliis ensiformibus tortis, culmo filiformi tereti tortili, capitulo parvo ovoideo paucifloro, squamis undique imbricatis obtusis centro discolore imberbibus inferioribus mino-

ribus vacuis, stigmatibus indivisis, capsula obovata apice simplici uniloculari, placentis basi distinctis.—(*Gunn*, 1389.)

HAB. Common on the road to Macquarrie harbour, in similar situations with *X. operculata*, *Gunn*.—(Fl. Nov.–Feb.)

DISTRIB. South-eastern Australia.

A much smaller species than *X. operculata*, with short, rigid, flat leaves, scabrous at the margin, and often tortuous, more slender twisted scapes, and smaller capitula, the scales of which are fewer, paler in the centre, and not quinquefariously arranged. *Outer scale* of perianth very broadly obcordate; inner lateral, with scabrous keels. *Ovary* obovate, not furnished with the granular four-lobed apex of *X. operculata*. Brown describes the capsule (which I have not seen) as unilocular, with three distinct placentæ.

NAT. ORD. XIV. RESTIACEÆ.

This Order, including *Centrolepideæ* as a tribe or suborder, is far more abundant in Australia than in any other country except South Africa. With the exception of the very widely distributed genus *Eriocaulon* (which is absent from Tasmania), almost all the genera of the Order are natives of these two countries, and the majority of them are Australian. Owing to the difficulty of discriminating the genera and species, and to the male and female individuals of the same species being often very dissimilar, the Australian members of the Order are in considerable confusion. Of these I have examined about 120 species, the majority of them natives of the south-western quarter of the continent, and very few indeed being common to that and the south-eastern quarter. The *Restiaceæ* generally grow in dry and poor soils, forming coarse, Rush-like or Grass-like tufts, that are sometimes with difficulty distinguished from *Cyperaceæ*, except by the sheaths of the culms and leaves, which are in *Restiaceæ* split at the base (except in *R. complanatus*), and the anthers are usually one-celled.

Gen. I. RESTIO, *L.*

Flores dioici, amenti squamis dispositi, ebracteati. *Perianthii* squamæ 4–6, glumaceæ. MASC. *Stamina* 4–6; *antheris* 1-locularibus, peltatis. FŒM. *Capsula* 2–3-loba, 2–3-locularis, angulis salientibus dehiscens; *stylo* 2–3-partito; *loculis* 1-spermis.—Herbæ *rigidæ;* rhizomate *aphyllo, squamato;* culmis *junceis, aphyllis, simplicibus v. ramosis, vaginatis;* vaginis *laxis v. culmo appressis;* amentis *solitariis spicatis paniculatisve.*

One of the largest genera of the Order, confined to South Africa and Australia, from which last country I have seen about thirty species. All are dry, rigid, Rush-like, diœcious plants, with woody, creeping, scaly rhizomes, sending up erect, simple or branched, bracteate culms, which bear terminal, small, brown, solitary or spiked or panicled amenta.—*Scales* of the amentum rigid, imbricate all round, each bearing one small, obscure, unisexual, ebracteate flower. *Perianth* of four to six coriaceous, brown glumes. *Male flower* with two or three stamens, with simple, peltate anthers. *Female* with a two- or three-celled and -lobed ovary, having a two- or three-parted style. *Capsule* small, two- or three-lobed, bursting at the angles; *cells* one-seeded. (Name from *restis*, a cord.)

§ 1. *Culms very rarely divided or branched.*

1. **Restio monocephalus** (Br. Prodr. 245); culmis simplicibus v. divisis teretibus, vaginis laxis truncatis, amentis solitariis paucisve late ovatis, squamis coriaceis obtusis, perianthiis 6-glumis, stylis 2.—(*Gunn*, 1392.) (TAB. CXXXV. *A.*)

HAB. Not uncommon in moist quartzy or sandy soil, in various parts of the Colony.—(Fl. Feb.)

DISTRIB. Victoria.

Brown describes this as having generally but one sheath on the culm, and a single amentum; such is the case with my smallest specimens only; the larger ones have numerous sheaths, and three to five alternate, peduncled amenta.—*Culms* 6–18 inches high, slender, bright-yellow when dry, glabrous or pubescent, rarely divided, terete, or grooved on one side above each node on the face opposite the vagina. *Sheath* $\frac{1}{3}$–$\frac{2}{3}$ inch long, lax, spread open, coriaceous, truncate, often ciliate or villous. *Amenta* $\frac{1}{4}$–$\frac{1}{2}$ inch long, broadly ovate. *Scales* imbricating all round, blunt, dark-brown, slightly ciliated, as are the perianth-scales. *Styles* separate from the very base. — PLATE CXXXV. *A.* Fig. 1, male flower; 2, female ditto, laid open; 3, ripe fruit; 4, transverse section of ditto; 5, fruit, dehisced; 6, one valve of ditto:—*all magnified.*

2. **Restio complanatus** (Br. Prodr. 245); dense cæspitosus, culmis simplicibus compressis, vaginis strictis membranaceis basi integris!, amentis laxe paniculatis erectis, masculis ovatis, fœmineis ovato-oblongis, squamis lanceolatis aristato-acuminatis ciliatis, perianthiis 4-glumis, stylo bifido v. bipartito. (*Gunn,* 962.)

HAB. Common in heathy places about Circular Head and Georgetown, *Gunn,* and probably in other parts of the Island.—(Fl. Nov., Dec.)

DISTRIB. New South Wales and Victoria.

Culms from very short, tufted rhizomes, 6–24 inches high, quite flat, or much compressed and two-edged. *Sheaths* membranous, with a short, erect, blunt apex, quite entire at the base. *Amenta* panicled in the upper sheaths, on long, slender peduncles, few or numerous, $\frac{1}{3}$ inch long, oblong ovate. *Scales* numerous, membranous, ovate, acuminate, aristate, ciliate, pale-brown and shining. *Perianth* of four membranous glumes. *Ovary* orbicular, flat, with a slender style bifid at the top or to the base.

3. **Restio australis** (Br. Prodr. 245); culmis simplicibus teretibus lævibus, vaginis laxiusculis obtusis supremis bracteisque tumidis, amentis ovatis racemosis v. subspicatis bracteis persistentibus brevioribus, squamis acuminatis aristatis laxe ciliatis lanatisve, perianthiis masculis 6-glumis, fœmineis 4-glumis, ovario compresso, stylo 2-partito.—*Sieber, Agrostoth.* 33. (*Gunn,* 422.)

HAB. Abundant on the mountains, in marshy places.—(Fl. Dec., Jan.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

Culms tufted, 1–2 feet high, perfectly smooth, terete, not shining. *Sheaths* erect, blunt, split to the base, 1 inch long, the upper tumid, passing into bracts enclosing the amenta. *Amenta* shortly peduncled, racemose, crowded at the top of the culms, broadly ovate, pale-brown and shining, subsquarrose from the spreading aristate points of the rather membranous scales.

4. **Restio gracilis** (Br. Prodr. 245); "culmis teretibus lævibus, vaginis strictis obtusis, spica multiflora subcomposita, spiculis fœmineis cylindraceo-oblongis acutis bracteas superantibus, squamis aristato-acuminatis, perianthiis 4-glumis, stylo bipartito."—*Br. l. c.*

HAB. Tasmania, *Brown.*

DISTRIB. New South Wales, *Br.*

I have seen no specimens of this species from Tasmania, but it appears to be best distinguished from its congeners of that country by its numerous spiked amenta, which are not overtopped by the bracts, as in *R. australis.*

§ 2. *Culms much branched.*

5. **Restio tetraphyllus** (Lab. Nov. Holl. ii. 77. t. 226 and 227); culmis robustis elatis teretibus striatis superne fastigiatim ramosis, ramis subcompressis, ramulis sterilibus alternatim fasciculatis dichotomis subsetaceis, vaginis strictis obtusis, panicula terminali elongata composita, spiculis pedunculatis late ovatis,

squamis aristato-acuminatis, perianthiis masculis 6-glumis, fœmineis 4-glumis, stylo 2–3-fido v. partito.—*Br. Prodr.* 247; *Sieb. Agrost.* 34. (*Gunn,* 331.)

HAB. Abundant throughout the Island, forming large tufts.—(Fl. Dec., Jan.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

At once recognized by its great size, 3–4 feet high, stout culms as thick at the base as a goose-quill, copious ramification, fasciculate, setaceous or filiform sterile branches, and long, compound panicles of broadly ovate, shining, peduncled amenta.

Gen. II. LEPYRODIA, *Br.*

Flores fasciculati, dioici v. hermaphroditi, 1–4-bracteati, exserti. *Perianthium* 6-glume, subæquale. MASC. *Stamina* 3; *antheris* peltatis, simplicibus. *Pistillum* 0 v. rudimentum. FŒM. *Ovarium* triquetrum, 3-loculare. *Styli* 3, sessiles; *capsula* trilocularis, triloba, angulis salientibus dehiscens. *Semina* solitaria.—Herbæ *perennes;* rhizomate *repente;* culmis *simplicibus v. ramosis, vaginatis;* fasciculis florum *simplicibus v. compositis.*

An extratropical Australian genus of about twelve species, distinguished from *Restio* chiefly by the bracteate flowers being fascicled and exserted, not sessile in the scales of the spikelet, and hidden by them. (Name perhaps from λεπρωδης, *leprous;* in allusion to the surface of the culms.)

1. **Lepyrodia Tasmanica** (Hook. fil.); culmis gracilibus ramosis teretiusculis subtiliter granulatis, vaginis strictis lamina brevi subulata, fasciculis spicæformibus alternis bracteatis, bracteolis perianthii submembranaceis ovatis acuminatis flore brevioribus, perianthii glumis lanceolatis aristato-acuminatis exterioribus brevioribus. (*Gunn,* 960, 1393.) (TAB. CXXXV. *B.*)

HAB. Wet places in the northern parts of the Island: Detention River, near Circular Head, and Lake St. Clair, *Gunn.*—(Fl. Dec., Jan.)

A very slender, branched, Rush-like plant, growing 1–5 feet high, the smaller states erect, the larger weak, and supporting themselves amongst bushes and herbage.—*Culms,* when dry, yellow-grey, and minutely granular on the surface, terete, the branches somewhat compressed. *Sheaths* appressed, $\frac{1}{2}$-$\frac{3}{4}$ inch long, with subulate points. *Flowers* in alternate, spike-like, erect fascicles towards the ends of the branches, each fascicle shortly pedicelled, arising from the axil of a membranous bract, $\frac{1}{4}$–$\frac{1}{2}$ inch long. *Perianths* pale-brown, shining, each with two to four short, sheathing, ovate-acuminate, membranous bracts at its base; outer glumes shorter than the inner, all lanceolate-acuminate and subaristate.—PLATE CXXXV. *B.* Fig. 1, male flower; 2, stamen; 3, female flower and bracts; 4, pistil and imperfect stamens; 5, ovary; 6, transverse section of ditto; 7, stigmatic surface:—*all magnified.*

Gen. III. LEPTOCARPUS, *Br.*

Flores dioici, fasciculati v. amentacei. *Perianthium* 4–6-glume. MASC. *Stamina* 3; *antheris* simplicibus, peltatis. FŒM. *Ovarium* 1-ovulatum, stylo 2–3-partito. *Utriculus* v. *nux* crustacea, basi styli coronata. *Semen* 1.—Herbæ; rhizomate *repente;* culmis *teretiusculis, simplicibus v. ramosis, vaginatis;* fasciculis *v.* spicis fœmineis *sæpius subspicatis;* amentis masculis *sæpius paniculatim ramosis.*

The great dissimilarity between the male and female plants of some species of this genus renders it very difficult to arrive at any accurate determination of these from herbarium specimens, and I am not perfectly certain that the plants described under *L. tenax* are sexes of the same. In both Tasmanian species the culms are simple, terete, and furnished with appressed sheaths; the male amenta form effuse, terminal panicles, and are ovate, or oblong and cylindrical; the female amenta are crowded, erect, and shortly peduncled. *Flowers* in both sexes hidden by the closely imbricated scales of the amentum, sessile. *Males* of four erect glumes, rather distant at the base; *stamens* three, included; *anthers* simple; *filaments* short. *Females* of six glumes, the two or three outer larger;

one rather slender one-ovuled ovary, and exserted bifid to quadrifid style. *Fruit* a crustaceous, one-celled and one-seeded, indehiscent nut. (Name from λεπτος, *slender*, and καρπος, *fruit*.)

1. **Leptocarpus Brownii** (Hook. fil.); culmis simplicibus gracilibus teretibus, vaginis appressis strictis, paniculæ ramis cano-tomentosis, amentis masculis paniculatis effusis ovato-cylindraceis, perianthiis 4–5-glumis, fœmineis in fasciculis alternis sessilibus congestis 6-glumis.—L. simplex, *Br. Prodr.* 250 (*sed non* Restio simplex, *Forst. Prodr.*); *Nees in Plant. Preiss.* ii. 63. Schœnodum simplex, *Kunth, En. Plant.* iii. 446, *in part.* (*Gunn*, 338, *masc.*; 778, 964 *in Herb. Lindl, et* 1444, *fœm.*) (Tab. CXXXVI.)

Hab. Abundant in wet, marshy, and sandy places throughout the Island.—(Fl. Oct.–Dec.) (*v. v.*)

Distrib. New South Wales and Victoria.

The female plant of this species so entirely resembles the *L. simplex*, Forst., of New Zealand, that it has been referred to that species by Brown, and, following him, by myself in the 'Flora Novæ-Zelandiæ.' At the period of publication of the latter work, I had not discovered that the plant I now consider to be the female of the Tasmanian *L. Brownii* (and which is very different from the female New Zealand *L. simplex*) was so, both because of its great dissimilarity, and because of its bearing a different number in Gunn's collection. I have however been confirmed in this conclusion by Dr. Mueller sending the same plants as sexes of one from Victoria, under Brown's name of *L. simplex*.—*Culms* 1–2 feet high, slender. *Male panicle* effuse, of six to twenty amenta, on pubescent, flexuous pedicels, each cylindrical, ovate, or lanceolate, about $\frac{1}{4}$–$\frac{1}{2}$ inch long, of numerous, shining, deep-brown, ovate, mucronate or acuminate, glabrous scales. *Female amenta* very short, densely fascicled, their scales similar to those of the males. *Perianth* of the male flower of four or five unequal, irregular, linear glumes; of the female of six broadly ovate-oblong, acuminate glumes, the inner very much shorter.—Plate CXXXVI. Fig. 1, male flower; 2, female ditto; 3, the same, laid open:—*all magnified.*

2. **Leptocarpus tenax** (Br. Prodr. 250); culmis simplicibus teretibus, vaginis appressis, paniculæ ramis albo-tomentosis, (*masculis?* culmis gracilibus cinereis, amentis parvis ovoideis laxe paniculatis, squamis obtusis, perianthiis 4-glumis,) *fœmineis* culmis robustis, amentis majusculis in spicam divisam erectam congestis, squamis rigide cartilagineis apicibus recurvis subaristatis, perianthiis 6-glumibus.—*Syn. plantæ masculæ:* Restio cinerascens, *Br. Prodr. fid. Siebr. Agrostoth.* 41, *et Nees in Herb. Lindl.* R. laxus, *Br. Prodr. fid. Nees in Herb. Lindl.* (*Gunn*, 981.)—*Syn. plantæ fœmineæ:* Schœnodum tenax fœmina, *Lab. Nov. Holl.* ii. *p.* 80. *t.* 229. (*Gunn*, 768.)

Hab. Waste places throughout the Island, abundant.—(Fl. Nov., Dec.) (*v. v.*)

Distrib. New South Wales, Victoria, and Swan River.

But for Dr. Mueller's having doubtfully suggested the males and females of this plant as belonging to one species, I should not have suspected such to be the case, though analogy with *L. Brownii*, and the fact of both forms being common in Tasmania, and each being unisexual, render his suggestion almost a certainty. The male plant very strongly resembles *Restio microstachys*, Br., from South-west Australia, if it be not that plant.—A larger, stouter plant than *L. simplex*. *Sheaths* with deciduous, membranous apices. *Male* with slender culms, 2–5 feet high, and a very copious-flowered panicle of very small, ovoid amenta, each about $\frac{1}{6}$–$\frac{1}{4}$ inch long, their scales broad, acute or blunt, and mucronate. *Perianth* of four linear-oblong glumes. *Female culms* less slender. *Amenta* congested in alternate, almost sessile fascicles, their scales very hard, cartilaginous, broadly ovate, with short, rigid, patent, subulate apices, very much larger than the male scales, their margins membranous. *Perianth* with long, narrow glumes, the outer larger.

I have examined an unnamed specimen of the male plant of this, gathered in Recherche Bay by Labillardière, who nevertheless took the male of the South-west Australian *Lyginia imberbis*, Br., for that of his Tasmanian *S. tenax*, as pointed out by Brown.

Gen. IV. HYPOLÆNA, *Br.*

Flores dioici, ♂ ebracteolati, squamis amenti sessiles; ♀ solitarii. Masc. *Amenta* multiflora, laxe paniculata. *Perianthium* 6-glume. *Stamina* 3; *antheris* peltatis, simplicibus. Fœm. *Amenta* terminalia, uniflora. *Perianthium* 6-glume, brevissimum. *Ovarium* 1-ovulatum; *stylo* deciduo, 2–3-fido. *Nux* ossea, stipitata, apice late crasse umbonata, basi perianthio brevi cincta.—Herbæ; rhizomate *repente; culmis teretiusculis, ramosis, vaginatis;* inflorescentia *mascula Leptocarpi.* (Character e *H. fastigiata.*)

I do not know the limits of this genus; there are several species described from Swan River, and others exist amongst the South-western Australian plants of the Hookerian Herbarium, provisionally referred by me to *Leptocarpus* and *Restio*, and requiring close examination. I have drawn up the generic character from the Tasmanian *H. fastigiata* alone, for the *H. exsulca* of Brown I take to be the female of Labillardière's *Calorophus elongatus*, the male of which Brown has referred to *Restio*. The male plant of *H. fastigiata* very closely resembles that of *Leptocarpus Brownii* in appearance and structure, but its culms are ashy, more pubescent, and excessively branched. The female plant resembles the male in general appearance, but instead of bearing terminal effuse panicles of nodding or drooping cylindrical amenta, it has solitary or very few terminal, erect, single-flowered amenta.—*Female flower* sunk in the large upper scales of the amentum; *perianth* of six very small glumes, that embrace the base of the stalked nut, and adhere to it after it has fallen away. *Nut* one-celled, one-seeded, with a large, polished, pale, hemispherical or conical, umbonate top. (Derivation of name unknown to me.)

1. **Hypolæna fastigiata** (Br. Prodr. 251); culmis fastigiatim ramosis teretibus striatis cinerascentibus, vaginis strictis brunneis apice membranaceis, perianthii fructiferi glumis ovalibus.—*Kunth, En.* iii. 451. (*Gunn*, 599, 963, 964, 965.) (Tab. CXXXVII.)

Hab. Abundant in sandy places which are wet in winter.—(Fl. Nov.) (*v. v.*)

Distrib. New South Wales, Victoria, and Swan River.

Restio cinerascens, Br., of South-western Australia, most strongly resembles the male of *H. fastigiata*, if it be not the same plant.—Plate CXXXVII. Fig. 1, male amentum; 2, scale of ditto, and flower; 3, flower, removed; 4, stamen; 5, female amentum; 2, flower; 5, unripe nut, cut vertically:—*all magnified.*

Gen. V. CALOROPHUS, *Lab.*

Amenta parva, vaginis culmi semi-immersa, pauciflora. *Flores* monoici v. dioici. Masc. *Perianthium* 6-glume. *Stamina* 3; *antheris* simplicibus, peltatis. Fœm. *Perianthium* 6-glume, breve. *Ovarium* 1-ovulatum; *stylis* 2–3. *Nux* ossea v. crustacea, elliptica, apice non incrassata, perianthio cincta.—Herbæ; rhizomate *repente;* culmis *gracillimis, flexuosis, subfastigiatim v. alternatim ramosis, semiteretibus;* vaginis *ore barbatis glabrisve, appressis, coriaceis, mucrone patente terminatis;* amentis *parvis, squamis rigide coriaceis cartilagineisve.*

Several species of this genus abound in extratropical Australia, but all want examination. The genus differs from *Hypolæna* in habit, in the mucronate apex to the sheaths of the culm, in the three stout, pale styles, and in the absence of a tumid top of the nut.—*Culms* rigid, wiry, green, often flexuose, sparingly or profusely branched, the branches very slender, terete, or grooved on one side. *Sheaths* very rigid, coriaceous, cartilaginous, closely investing the culms, with patent, rigid, subulate points. *Amenta* small, unisexual, rarely hermaphrodite, more or less sunk in the sheaths of the culm; scales convolute. *Male* of few flowers. *Perianth* included or exserted, of six lanceolate glumes, and three stamens with exserted anthers. *Female amenta* with one or few almost terminal flowers, of which the upper alone is perfect. *Perianth* of six small glumes, which adhere to the ripe nut. (Name from *καλωροφος, a Restio*, according to Labillardière.)

1. **Calorophus elongatus** (Lab. Nov. Holl. ii. p. 7. t. 228); culmis basi subfastigiatim ramosis, ramulis gracilibus elongatis flexuosis, vaginis ore barbatis, amentis masculis 4–6-floris bractea obtusa barbata suffultis, glumis 6 linearibus, amentis fœmineis 1–3-floris, floribus remotis inferiore 2-glumi cæteris 6-glumibus.—*Nees, in Pl. Preiss.* ii. 68; *Nob. in Fl. N. Zeal.* i. 267. Restio lateriflorus, *Br. Prodr.* 247; *Kunth, En.* iii. 419; *Sieb. Agrostoth.* 29 *et* 39. Leptocarpus squarrosus, *Nees, in Sieb. Agrostoth.* 38. (*Gunn*, 599.)

Var. *β. minor;* humilis, fastigiatim ramosus, ramis brevibus gracilibus, amentis masculis 1–2-floris, fœmineis solitariis.—C. minor, *Nob. in Fl. N. Zeal.* i. 267.

Hab. Abundant throughout the Island, in sterile, swampy places. Var. *β.* Alpine marshes, alt. 3–4000 feet.—(Fl. Nov.) (*v. v.*)

Distrib. South-eastern and South-western Australia; New Zealand (both varieties).

Culms pale-green, rigid, wiry, 2–3 feet long, flexuous. *Branches* slightly compressed. *Sheaths* with a more or less woolly mouth, and patent or recurved apex. The var. *β* is a much smaller and different-looking plant, which I described as a doubtfully new species in the New Zealand Flora; but Gunn considers it the same as *C. elongatus*, and except in its smaller size and fewer flowers, I can find no difference between the Tasmanian lowland and alpine states. The New Zealand var. *minor* has very much more woolly sheaths, with erect apices. *Calorophus flexuosus*, Nees, and *C. crispatus*, Nees, are both very nearly allied to this variety, and in some respects intermediate between it and *C. elongatus*.

Gen. VI. APHELIA, *Br.*

Spica solitaria, terminalis, disticha. *Squamæ* 1–3-floræ, omnes uniflores, hermaphroditæ, v. inferiores 1 v. 2 masculæ, 1–3-floræ; floribus uniglumibus, monandris; cæteræ fœmineæ, unifloræ eglumes v. 1-glumes, gluma postica monogyna. *Utriculus* monospermus; *stylo* filiformi.—Herbæ *pusillæ* Cyperi *parvuli facie;* radicibus *fibrosis;* foliis *omnibus radicalibus, filiformibus;* scapo *nudo, indiviso;* spicula *compressa, ovata v. oblonga.*

A very curious little genus, of which the Tasmanian and Victoria species differ from the original South-west Australian *A. cyperoides*, described by Brown, in the glumes being unisexual, and in the lower scales of the spike having several male flowers, and the rest bearing a solitary female one. I have examined four species of this section; all are South-west Australian, and two of these are here described.—Minute, tufted, annual, herbaceous plants, about an inch high, with capillary leaves and scapes, the latter bearing a solitary, flat; distichous, erect or inclined, ovate spikelet. *Lower scales* longer than the others, forming a kind of involucre, more coriaceous, with a subulate, herbaceous limb and apex, and membranous margins. *Glumes* solitary, of male flowers, minute, lanceolate, membranous, hyaline. *Stamens* with filiform, flattened filaments, and one-celled, linear anthers. *Upper scales* 8–10, broadly ovate, cucullate, obtuse, green, with broad, membranous margins. *Utriculus* membranous, linear-oblong, bursting externally down the middle. (Name from *αφελης, simple.*)

1. **Aphelia Gunnii** (Hook. fil.); spica inclinata, squama inferiore mascula solitaria aristata involucriformi, cæteris fœmineis ovatis obtusis ecarinatis medio setosis. (*Gunn*, 1499.) (Tab. CXXXVIII. *C.*)

Hab. Wet places: Formosa, *Gunn.*—(Fl. Nov.)

Distrib. Victoria, *Mueller.*

An exceedingly slender leaved and culmed annual weed, scarcely an inch high, with a small, inclined spike.—Plate CXXXVIII. *C.* Fig. 1, spikelet; 2, lower scale and male flower; 3, upper scale; 4, female; 5, utriculus, burst open; 6, seed; 7, diagram of spikelet:—*all magnified.*

2. **Aphelia Pumilio** (Mueller, in Herb. Hook.); spica suberecta, squamis 2 inferioribus aristatis cæteris brevius aristatis margine fimbriatis dense ciliatis.

HAB. Cheshunt, *Archer.*

DISTRIB. Victoria.

A much shorter species than *C. Gunnii*, scarcely an inch high, with a larger, broader, erect spik, and fimbriated margins to the scales.

Gen. VII. CENTROLEPIS, *Lab.*

Capitulum solitarium, terminale, bracteis spathisve 2 inclusum. *Flores* pauci v. numerosi, hermaphroditi, biglumes, receptaculo communi nudo v. paleaceo (paleis squamas spiculæ referentibus?) conferti. *Stamen* 1; *anthera* simplici. *Ovaria* plurima (3–12), axi communi seriatim imbricata, monosperma; *styli* totidem, simplices, distincti v. basi connati. *Utriculi* extus longitudinaliter dehiscentes.—Herbæ *cæspitosæ, pusillæ;* radicibus *fibrosis;* foliis *omnibus radicalibus, setaceis;* scapis *filiformibus, nudis, indivisis;* spathis *alternis, approximatis, aristatis muticisve.*

Small, annual, tufted herbs, with setaceous radical leaves, naked scapes, and terminal capitula of minute flowers, enclosed in two bracts or a two-valved spathe. About twelve species are known, chiefly natives of South-western Australia.—*Flowers* hermaphrodite, of two membranous glumes, enclosing a single stamen and a compound pistil, all hidden by the two-valved spathes. *Pistil* formed of many connate, membranous utricles, often imbricating, and forming a moniliform mass, their single capillary styles free, or united at their bases. *Utricules* each bursting outwardly.—In some species scales or paleæ are found intermixed with the flowers: these suggest the idea of the capitulum being a reduced, contracted spike, of which the paleæ are the scales. (Name from *κεντρον, a spur*, and λεπις, *a scale;* in allusion to a mistaken view of the inflorescence; but, as the name seems sufficiently significant, if regarded as applied to a genus most of whose species have awned spathes, I have followed Kunth, Endlicher, and others, in retaining this name.)

1. **Centrolepis aristata** (Rœm. et Schult. Syst. i. 44); scapo ancipiti, spathis glaberrimis longe foliaceo-aristatis, receptaculo epaleaceo, floribus 10–16, glumis 2 lanceolatis, interiore majore abrupte eroso, exteriore apice lacero, ovariis 4–7, stylis basi connatis.—*Kunth, En. Plant.* 490. Desvauxia aristata, *Br. Prodr.* 253; *Nees, in Plant. Preiss.* ii. 71. (*Gunn*, 1438.) (TAB. CXXXVIII. *D.*)

HAB. Abundant in wet sandy soil near Georgetown and Launceston, *Gunn.*—(Fl. Oct.)

DISTRIB. Swan River and Victoria.

Plants rather rigid, 2–3 inches high, perfectly glabrous everywhere. *Scape* flattened and two-edged. *Spathes* with long, ensiform, herbaceous, flattened awns, the inner longest, obscurely jointed on the broad, coriaceous lamina. *Outer glume* (which Nees suggests may be a palea, and I regard as a scale of the reduced spike) lanceolate, acuminate, torn or toothed at the apex; inner twice as long, opposite the outer, abrupt and erose. *Stamen* opposite the inner glume. *Ovaries* four to seven.—PLATE CXXXVIII. *D.* Fig. 1, spikelet; 2, flower, removed from ditto; 5, stamen; 6, utriculus; 7, seed:—*all magnified.*

2. **Centrolepis tenuior** (Rœm. et Schult. Syst. i. 43); foliis capillaribus brevibus hispidis, scapis strictis filiformibus pubescentibus, spathis late cymbæformibus acuminatis hispidis, receptaculo epaleaceo, glumis 2 fimbriato-laceris ciliatis, ovariis 4–10, stylis basi connatis.—*Kunth, En.* iii. 489. Desvauxia tenuior, *Br. Prodr.* 252. (*Gunn*, 958.)

HAB. Abundant in wet sandy soil near Georgetown, and at Epping Forest, *Gunn, Archer.*—(Fl. Nov., Dec.)

DISTRIB. Victoria, *Mueller.*

This in many respects agrees with Brown's description of *D. Patersoni*, Br., but both spathes are equally hispid. The spathes are in this species separated, the upper being distinctly pedicelled.—*Leaves* pilose, with rigid, spreading hairs, very much shorter than the numerous, strict, pilose scapes. *Capitulum* ¼ inch broad. *Spathes* very broad, concave, hispid, with membranous margins, and very short, mucronate or subaristate apices.

3. **Centrolepis fascicularis** (Lab. Nov. Holl. i. p. 7. t. 1); dense cæspitosa, foliis basi pilosis scapis glabris brevioribus, spathis hispidis retusis aristatis, receptaculo epaleaceo, floribus 8–10 2-glumibus, glumis bifidis, ovariis 3–5, stylis basi connatis.—*Desvaux, in Ann. Sc. Nat.* 1828, xlii. *t.* 2. *f.* 4; *Endl. Icon. t.* 49; *Kunth, En.* iii. 489. Desvauxia Billardieri, *Br. Prodr.* 252. (*Gunn*, 957.)

Hab. Abundant in wet, heathy plains, forming large matted patches.—(Fl. Dec., Jan.)

Distrib. New South Wales and Victoria.

A very densely-tufted species, 1–2 inches high, with membranous, pilose sheathes to the leaves, glabrous, rather rigid scapes, and hispid spathes, which are broadly retuse at the apex, and furnished with an erect, rigid, stout arista, as long as the lamina. *Flowers* numerous; *glumes* two, bifid, ciliated.

4. **Centrolepis pulvinata** (Rœm. et Schult. Syst. i. 43); foliis scapos subæquantibus, spathis muticis valvula inferiore hispidiuscula, superiore glabra, receptaculo paleaceo, stylis 6–7 distinctis.—*Desv. in Ann. Sc. Nat.* 1828, xlii. *t.* 2. *f.* 3; *Kunth, En. Pl.* iii. 489. Desvauxia pulvinata, *Br. Prodr.* 252; *Guill. Ic. lith. t.* 17.

Hab. Tasmania, *Brown.*

Distrib. South-west Australia.

I have seen no Tasmanian specimens of this species, which is smaller than either *C. fascicularis* or *tenuior*, has awnless spathes, the lower of which only is hispid, has leaves as long as the scapes, and six to seven distinct styles.

Gen. VIII. ALEPYRUM, *Br.*

Capitulum solitarium, terminale, 1- v. pauci-florum, bracteis spathisve 2 inclusum. *Flores* hermaphroditi, uniglumes v. eglumes, monandri, mono-polygami. *Utriculi* extus longitudinaliter dehiscentes.—Herbæ *pusillæ, cæspitosæ;* radicibus *fibrosis;* foliis *setaceis;* scapis *filiformibus, nudis, indivisis;* spathis *alternis, approximatis, aristatis muticisve.*

Alepyrum is a reduced form of *Centrolepis*, in which the flowers are few, and the glumes absent, or reduced to one. With the exception of a New Zealand alpine species, the genus is confined to extratropical Australia and Tasmania. The *A. monogynum* is intermediate between *Alepyrum* and *Centrolepis.* (Name from α, privative, and λεπυρον, *a covering;* from the imperfect flowers.)

1. **Alepyrum monogynum** (Hook. fil.); dense cæspitosum, muscoideum, foliis subulatis culmos subæquantibus, spathis lanceolatis, floribus 2, gluma lineari-lanceolata, ovario solitario. (*Gunn*, 1434.) (Tab. CXXXVIII. *B.*)

Hab. Moist subalpine situations: margin of Lake St. Clair, and near Marlborough, *Gunn.*—(Fl. Jan.)

Plants forming small, pale-green, dense tufts, ½ inch high, with numerous, matted, white, fibrous roots, somewhat resembling *Scleranthus.*—*Leaves* as long as the scapes. *Flowers* two, enclosed in lanceolate spathes. *Glume* one. *Ovary* solitary.—Plate CXXXVIII. *B.* Fig. 1, leaf; 2, spathes and flowers; 3, spathe; 4, flower and glume; 5, utricle, burst open; 6, seed; 7, diagram of spathe, glume, stamen, and pistil:—*all very highly magnified.*

2. **Alepyrum muscoides** (Hook. fil.); caulibus dense cæspitosis muscoideis, foliis scapos superantibus, spathis lanceolatis aristatis inferiore longiore, floribus 4, gluma 0, ovariis sub-6–8.

Hab. Marshy ground, in subalpine situations: Marlborough, *Gunn.*—(Fl. Jan.)

Very similar to *A. monogynum*, but with more aristate spathes, four flowers, and six to eight ovaries, imbricating in two series.

3. **Alepyrum Muelleri** (Hook. fil.); foliis capillaribus, spatha inferiore aristata superiore mutica, floribus 4, gluma 0, ovariis sub-10.—Desvauxia glabra, *Mueller, in Herb. Hook.* (*Gunn*, 2015.)

Hab. Bottom of a lagoon, Macquarrie River, *Gunn.*—(Fl. Nov.)

Distrib. Mount Emu Creek, Victoria, *Mueller;* South-west Australia, *Drummond.*

Laxly tufted, scarcely an inch high. *Stem* excessively short, with short, white, tufted roots. *Leaves* rather flaccid, between subulate and capillary, rather shorter or longer than the scapes. *Spathes* about $\frac{1}{6}$ inch long, the lower with a straight awn. *Ovaries* imbricated in two series; the styles more or less combined in Victoria specimens, more free in Tasmanian.

4. **Alepyrum polygynum** (Br. Prodr. 253); foliis setaceis culmis rigidis brevioribus, spathis coriaceis inferiore longe rigide foliaceo-aristata, floribus 1–2, gluma 0, ovariis 10–20.—*Kunth, En.* iii. 488; *Nees, in Plant. Preiss.* ii. 71. (*Gunn*, 1436.)

Hab. Near Georgetown, *Gunn.*—(Fl. Oct.)

Distrib. Swan River and Victoria.

Remarkable for its profusion of rigid culms, 1–3 inches high, with very short, subulate leaves at the base, brown, lanceolate spathes, the outer with a long, nearly straight or curved, green, foliaceous arista, $\frac{1}{2}$ inch long. *Flowers* one or two, with ten ovaries.

Genus Restiaceis *affine?*—TRITHURIA, *Hook. fil.*

Capitulum solitarium, terminale, multiflorum, foliolis 4 involucratum. *Flores* unisexuales, capitulo sine ordine aggregati, omnino achlamydei. Masc. *Stamen* solitarium; filamento elongato; anthera lineari-oblonga, 2-loculari, basi affixa; *polline* globoso. Fœm. *Ovarium* pedicellatum, obovatum, membranaceum, triquetrum, 1-loculare; *ovulo* solitario, pendulo, anatropo; *stylis* 2–3 filiformibus. *Capsula* membranacea, obovata, triquetra, 3-valvis; *valvis* a septis intervalvaribus secernentibus. *Semen* lineari-oblongum, cylindraceum; *testa* membranacea; *raphe* cellulosa; *albumine* dense carnoso; *embryone* minimo, conico, extremitati radiculari albuminis applicato.—Herba *perpusilla, annua, aquatica;* radicibus *fibrosis;* foliis *subulatis, subcellulosis;* scapis *plurimis, foliis longioribus v. brevioribus;* capitulo $\frac{1}{6}$–$\frac{1}{4}$ *unc. lato;* involucri foliolis *ovato-oblongis, obtusis,* 2 *exterioribus paulo majoribus;* floribus *minimis, receptaculo parvo confertis, fœmineis maturis a pedicello persistente solutis.*

A singular little plant, of very obscure affinity, discovered by Gunn in Tasmania, and also by Mueller in South-eastern Australia, who has proposed for it the manuscript name of *Juncella Tasmanica*, and placed it in *Centrolepideæ*, from which however it differs remarkably in the dehiscence of the capsule, and two-celled anther, which is inserted by its base on the filament. I have ventured to supersede the name proposed (without description) by Mueller, both because the plant has no affinity with or resemblance to *Juncus*, and because it is not confined to Tasmania. In habit and the involucre it resembles *Eriocaulon*, but it differs from that genus in the capsule, naked flowers, and anther.—A minute water-plant, 1–2 inches high, growing at the bottom of fresh-water pools, and conspicuous (according to Gunn) when in fruit, from the bright-red colour of the minute capitula.—*Roots* fibrous. *Stem* almost none, the subulate, membranous, spreading leaves appearing to rise from the roots. *Scapes* numerous, bearing a very small capitulum of minute flowers, enclosed in an involucre of four ovate-oblong, blunt, membranous leaves. *Male flowers:* solitary stamina with long filaments and two-celled anthers, scattered indiscriminately amongst the *female flowers*, which consist of minute, trigonous, obovate, stipitate ovaries, with two or three filiform

styles, one cell, and one pendulous, anatropous ovule. *Capsule* jointed on to the pedicel, trigonous, of three membranous valves, which are separated by narrow repla; in dehiscence the valves fall away completely, and the repla separate, whence the capsule appears to be formed of six pieces, of which three are broadly elliptical, and alternate with as many very narrow ones. *Seed* cylindric-oblong. (Name from τρεις, *three*, and θυρις, *a hole* or *window*; in allusion to the dehiscence of the capsule.)

1. **Trithuria submersa** (Hook. fil.).—Juncella Tasmanica, *Mueller, in Herb. Hook., and in Catalogue of Victoria Plants, sine descript.*). (*Gunn*, 2014.) (Tab. CXXXVIII. *A.*)

Hab. Bottom of a lagoon near Macquarrie Harbour, *Gunn.*—(Fl. Nov.)

Distrib. Victoria: Hopkins River and Mount Emu Creek, *Mueller.*

Plate CXXXVIII. *A.* Fig. 1, capitulum; 2, the same, with the involucre spread open; 3, stamen; 4, pollen; 5, female flower; 6, stigma; 7, ripe fruit; 8, ditto, with the valves separate; 9, seed; 10, ditto, cut longitudinally, showing the embryo:—*all magnified.*

Nat. Ord. XV. CYPERACEÆ.

One of the most difficult Tasmanian Natural Orders to investigate, and I am not at all confident of having rightly determined several of the genera and species, though I have devoted much labour and thought to them, and examined most of the Australian *Cyperaceæ* at the same time. The genera are to a great extent natural, but their limits are extremely vague, and the technical characters necessary to limit them are seldom constant; thus, *Chætospora* differs from *Schænus* only in the presence of hypogynous bristles, which are often excessively minute, or even evanescent, and some plants almost identical in all other points are hence generically separated by this artificial character. These two genera again differ from *Isolepis* and *Scirpus* chiefly in their scales being distichous; but species of both have imbricating scales. The shape of the nut, and its articulation with the base of the style, also afford good characters, but often very difficult of appreciation; and the relative number of scales and flowers in a spikelet is also apt to vary, as does the number of stamens and styles, or arms of the style, in the same or most nearly allied plants. It is hence almost impossible to determine a few isolated species of the Order, except by artificial means, and it is better that the student of Tasmanian *Cyperaceæ* should not attempt to make out the species until the structure of at least half the genera of the Order is understood, when the value of their characters (which are not expressed in absolute terms, but in relative) will become apparent.

I find about 350 Australian *Cyperaceæ* in the Hookerian Herbarium, and there are a considerable number of tropical species mentioned in Brown's 'Prodromus,' which I am unable to identify with any of these, so that I assume that there may be fully 400 known Australian ones. Of these a large proportion (fully one-third) are almost exclusively tropical, and a considerable number of them identical with Indian and Malay Island plants, often of wide tropical distribution. Of the extratropical species the majority are natives of the south-western quarter, and comparatively few are common to this and the south-eastern quarter. The Tasmanian species are almost without exception also natives of Victoria and New South Wales; a few of them are common to New Zealand, and some to all temperate and many tropical latitudes.

Gen. I. CYPERUS, *L.*

Spiculæ distichæ, multifloræ; *squamis* numerosis, carinatis, omnibus conformibus floriferis, v. paucis infimis minoribus vacuis. *Setæ* hypogynæ 0. *Stylus* inarticulatus, deciduus.—Culmi *simplices, enodes, basi foliati v. vaginati;* inflorescentia *terminali, involucrata;* spiculis *sæpissime versus apices radiorum umbellæ congestis spicatisve.*

A very large and natural tropical genus, of which about fifty Australian species are known, but few enter the cool temperate regions of either hemisphere. The Tasmanian species of the genus are tall, marshy, sedgy plants, with creeping rhizomes, trigonous, unjointed, erect, stout culms, leafy at the base, and bearing at the top an unequal, many-rayed umbel, surrounded by a long, leafy involucre; each ray of the umbel bears towards its apex numerous divaricating, linear, red-brown, shining spikelets, of numerous distichous scales, all of which but the lowest are floriferous.—*Flowers* of three stamens in each scale, and one pistil, without hypogynous scales. *Style* deciduous, but not jointed on to the achenium. (Name of doubtful derivation.)

1. **Cyperus sanguineo-fuscus** (Nees, in Ann. and Mag. Nat. Hist. vi. 46); elatus, robustus, umbellis sub-8-radiatis simplicibus v. radiis longioribus apice compositis, spicis breviter cylindraceis, spiculis (½–1-pollicaribus) linearibus patento-reflexis 6–10-floris, squamis laxis lineari-oblongis obtusis carinatis sulcatis, nuce lineari-obovata acute trigona, involucris 6–8-phyllis 1–2-pedalibus serratis, culmo striato lævi. (*Gunn*, 557, 956.) (Tab. CXXXIX.)

Hab. Common on river-banks and in marshy places throughout the Island.—(Fl. Nov., Dec.) (*v. v.*)

Much the largest Tasmanian species, and a very handsome plant, growing 3–5 feet high. It varies a good deal in size and in the length of the spikelets, and immature flowers at first sight look very different from mature ones.—*Culms* trigonous; angles blunt, smooth. *Involucre* of six to eight long, flat leaves, 1–1½ foot long, and ⅔ inch broad at the base, their margins and keel scabrid from beyond the middle or from the base. *Rays of umbels* six to eight, most of them 4–6 inches long, some very short, bearing at their apices one to three oblong spikes about 1 inch long; when more than one, the lateral spikes spread horizontally from the base of the central one. *Spikelets* crowded, ½–1 inch long, linear, patent or divaricating, subulate in a young state; *rachilla* with two broad membranous wings opposite each scale, which enclose the nut. *Scales* alternate, distichous, loosely imbricating when in flower, almost distant when in fruit, linear-oblong, blunt or notched at the apex; lower short and empty; fruiting ones keeled, grooved, nearly ¼ inch long, shining, bright chesnut-brown, with a green keel. *Stamens* 3. *Nut* sharply trigonous, linear-obovate, acute, white, smooth.—Plate CXXXIX. Fig. 1, spikelet; 2, scale and flower; 3, pistil:—*all magnified.*

2. **Cyperus Gunnii** (Hook. fil.); umbellis sub-8-radiatis, spicis compositis subcapitatis, spiculis (⅓–½-pollicaribus) dense congestis linearibus 6–10-floris, squamis arcte imbricatis late ovato-oblongis apice rotundatis mucronulatis margine pallidis, nuce lanceolata obtusa trigona, involucris 3–4-phyllis angustis 1–1½-pedalibus serratis, culmo lævi. (*Gunn*, 1403.) (Tab. CXL. *A*.)

Hab. Also probably common: Penquite, near Launceston, *Gunn*.—(Fl. Dec.)

Distrib. New South Wales and South-east Australia.

A much smaller and more slender plant than *C. sanguineo-fuscus*, 2–3 feet high, with very narrow involucres of only about three leaves, each about ⅓ inch broad at the base; shorter rays of the umbel, which bear almost globose, lobed, dense heads of several crowded spikes; and the spikelets also are shorter, flatter, of short, broad, densely imbricate scales.—Plate CXL. *A*. Fig. 1, spikelet; 2, scale and flower; 3, pistil:—*all magnified.*

Gen. II. SCHŒNUS, *L.*

Spiculæ solitariæ fasciculatæ v. paniculatæ (non capitatæ), pauciflore; *squamis* distichis, rarius undique imbricatis, extimis minoribus, vacuis, floriferis majoribus. *Setæ* hypogynæ 0. *Stylus* 2–3-fidus.—Herbæ *pleræque rigidæ, gramineæ;* culmis *inarticulatis, teretibus trigonisve, basi tantum v. per totam longitudinem foliatis;* spiculis *solitariis paniculatisve, fusco-brunneis;* squamis *chartaceis.*

I have not united *Chætospora* with *Schœnus*, though the presence of hypogynous bristles in the former is a purely artificial character, separating in many instances most closely allied plants, and some few that otherwise are almost indistinguishable; their absence or presence is not accompanied by any characters of habit, inflorescence, or habitat. A revision of the genera would doubtless lead to the abandonment of this character, and perhaps to

better ones founded on the insertion of the style. The species with the scales imbricated all round the spikelet should technically be referred to *Isolepis*, but would be most unnaturally associated with the other species of that genus.—Generally harsh, wiry plants, with creeping rhizomes (or tufted culms), and terete or trigonous, solid, inarticulate culms, leafy at the base or all the way up. *Spikelets* axillary or terminal, fascicled, panicled, or solitary (not densely packed in a globose terminal capitulum, as in *Gymnoschænus*). *Scales* distichous or rarely imbricated all round, of few dark-brown, hard, chartaceous scales, the outer smaller and empty, the inner bearing one flower each. *Stamens* 3. *Nut* trigonous, without hypogynous scales or bristles. (Name from σχοινος, *a Rush*.)

1. **Schœnus fluitans** (Hook. fil.); culmis flaccidis densissime cæspitosis elongatis gracillimis longe fluitantibus foliatis, foliis anguste linearibus flaccidis, spicula terminali solitaria lineari 2-flora, squamis 4 lineari-lanceolatis subacutis compressis membranaceis nitidis, staminibus 3, nuce elliptica trigona angulis costatis, stylo elongato filiformi persistente basi non incrassato, stigmatibus 3 deciduis. (Tab. CXLI. *B.*)

Hab. South Esk River, *Gunn*.—(Fl. Jan.) (*Gunn*, 1432.)

A very singular plant, in habit unlike its congeners, and resembling *Isolepis fluitans* very closely.—*Culms* densely tufted, rooting at the base in gravel, the main part floating, 2 feet long, very flaccid, and much branched. *Leaves* narrow-linear, with membranous sheaths and an evident ligula. *Spikelets* solitary, terminal, bright pale-chesnut, shining, linear, narrow, nearly ½ inch long, much compressed, two-flowered. *Scales* membranous, not nerved; lower shorter, all linear-lanceolate, subacute. *Nut* pale-brown, small, smooth, with a very long persistent style, from which the three stigmas fall away. *Filaments* capillary, brown, persistent.—Plate CXLI. *B.* Fig. 1, spikelet; 2, scale and flower; 3, pistil:—*all magnified.*

Gen. III. CHÆTOSPORA, *Br.*

Omnia *Schœni* sed setæ v. squamulæ hypogynæ 3 v. plures. (Ab *Gymnoschœno* habitu tantum differt.)

The presence of hypogynous bristles or scales alone distinguishes this genus from *Schœnus*, and its habit from *Gymnoschœnus*. There are very many Australian species, some of which can hardly be separated specifically from others of *Schœnus*, except by the above character. (Name from χαιτη, *a hair*, and σπορος, *a seed*.)

1. **Chætospora tenuissima** (Hook. fil.); rhizomate repente, culmis gracillimis nudis trigonis sulcatis foliis filiformibus brevioribus, spicula disticha terminali solitaria lanceolata 1-flora, squamis enerviis interioribus elongatis, squamulis hypogynis 3 brevissimis obtusis, stylo basi bulboso-incrassato cum ovario articulato.—Lepidosperma tenuissima, *Muell. in Herb. Hook.* (*Gunn*, 1416.) (Tab. CXL. *B.*)

Hab. Moist sandy places near Hobarton, *Gunn*.—(Fl. Oct.) (*v. v.*)

Distrib. South-eastern Australia: Wilson's Promontory, *Mueller.*

A glabrous, wiry, smooth species.—*Rhizome* creeping, very stout. *Culms* much shorter than the long, flexuous, semiterete, deeply channelled leaves, erect, trigonous, grooved, bearing one erect, compressed, lanceolate, acute spikelet. *Spikelet* ⅓ inch long. *Scales* brown, smooth, nerveless, opaque, with pale membranous borders, one of the uppermost ones alone bearing a flower. *Style* glabrous, bulbous at the base, and jointed on to the ovary; the three stigmas exserted.—Plate CXL. *B.* Fig. 1, spikelet; 2, scale and flower; 3, pistil:—*all magnified.*

2. **Chætospora capillacea** (Hook. fil.); rhizomate repente, culmis nudis capillaribus, foliis capillaceis, spicula solitaria (v. 2 altera pedicellata) infra apicem culmi lanceolata compressa 2–3-flora, squamis enerviis interioribus elongatis extimis aristato-acuminatis, setis hypogynis 3 linearibus, stylo bifido basi villoso. (Tab. CXLI. *A.*)

Hab. Dry sandy banks: near Hospital Bay, South Huon River, *Oldfield.*

A very slender species, with capillary culms, and leaves 8–10 inches long.—*Rhizome* tufted and creeping. *Culms* thread-like, erect. *Spikelets* one or two towards the apex of the culm, minute, ⅕ inch long, narrow-lanceolate, dark-brown; when there are two, one is pedicelled. *Scales* distichous, outer with long apices, two or three inner

bearing a flower each. *Style* with two long, exserted stigmas, swollen and villous at the base. *Nut* not seen.—PLATE CXLI. *A.* Fig. 1, spikelet; 2, scale and flower; 3, pistil:—*all magnified.*

3. **Chætospora nitens** (Br. Prodr. 233); rhizomate repente, culmis nudis teretiusculis sulcatis basi foliatis, spiculis congestis lateralibus, squamis subdistichis obtusis nitidis, setis hypogynis basi plumosis, nuce trigona lævi mutica.—*Fl. N. Zeal.* i. 274. (*Gunn*, 972, 572, *in Herb. Lindl.*)

HAB. Sand-hills near Georgetown, *Gunn.*—(Fl. Dec.)

DISTRIB. Extratropical Australia, from New South Wales to Swan River; New Zealand.

A slender, rigid, wiry, perfectly glabrous plant, 2–12 inches high. *Rhizomes* creeping; bases of culms and leaves covered with appressed, black-brown, shining scales. *Leaves* slender, erect, semiterete, deeply grooved in front. *Spikelets* two to eight, fascicled, sessile, about an inch below the erect, subulate apex of the culm, $\frac{1}{6}$–$\frac{1}{4}$ inch long, turgid, of four to six broadly ovate, blunt, shining chesnut-brown, nerveless, smooth scales. *Nut* pale-brown, smooth, with six short, plumose, hypogynous bristles.—Brown places this in a section by itself, characterized by the scales being imbricated all round; but they are truly distichous in all my numerous specimens, though less regularly and manifestly so than in the other species.

4. **Chætospora imberbis** (Br. Prodr. 233); culmis cæspitosis erectis foliatis foliis subæquilongis, spiculis paniculatim fasciculatis axillaribus terminalibusque 2–4-floris, fasciculis bractea foliacea elongata subtensis, pedicellis squamarumque carina scaberulis, setis hypogynis brevibus scaberulis, nuce trigona alba obovata striatim clathrata, stylo basi simplici persistente.—*Fl. N. Zeal.* i. 274. C. tenuissima, *Steud. Pl. Glum.* 162.

Var. *α*; culmo sub-6-pollicari, bractearum vaginis castaneis nitidis $\frac{1}{2}$-pollicaribus, spiculis plurimis lanceolatis brunneis.

Var. *β*; culmo 2–3-pollicari, bractearum vaginis brevibus rufis, fasciculis spicularum solitariis (spiculis interdum solitariis) spiculis brevioribus pallidioribus. (*Gunn*, 1417.)

Var. *γ*; culmo 3–4-pollicari, foliis capillaribus, bractearum vagina brevi castanea limbo abbreviato, spiculis paucis parvis atro-castaneis. (*Gunn*, 1494, 581, 976.)

Var. *δ*; culmis pedalibus flaccidis foliisque gracillimis, bracteis vagina brevi pallida, spiculis pallidis. (*Gunn*, 1391.)

HAB. All the varieties very abundant in various soils and situations throughout the Island. Var. *γ*, in water or marshes.—(Fl. all the year.) (*v. v.*)

DISTRIB. New South Wales, Victoria, New Zealand.

This common and variable plant is always easily recognized by its tufted, erect, leafy culms, bearing shortly-pedicelled fascicles of lanceolate, compressed, small spikelets, which spring from the axils of a long, patent, bracteal leaf: it varies from 1 inch to a foot high, is of a soft texture, and of a green, grassy hue.—*Leaves* numerous at the base of the culm, longer or shorter than the culm, concave in front, convex at the back. *Sheaths* of the bracts or leaves on the culms long or short, from deep chesnut-brown to bright-red. *Fascicles* of spikelets subpanicled, few or many, generally from the two uppermost rather distant axillæ. *Spikelets* usually three or six in each axil, rarely solitary, on long or short scabrid pedicels, lanceolate, compressed, $\frac{1}{8}$–$\frac{1}{4}$ inch long. *Scales* variable in colour, with usually a green, scabrid keel, smooth, dark-brown sides, and rather acuminate, paler apex; the lowermost scales vary from being acute to acuminate, and even shortly aristate. *Flowers* two to four. *Setæ* bristle-shaped, hispid. *Nut* white, short, broadly obovate, trigonous, grooved, the grooves with a longitudinal series of pits. *Style* rather persistent, neither swollen nor jointed on to the nut.—This is probably the *C. tenuissima*, Steud. (Syn. Plant. Glum. etc., p. 162), which is said to have been gathered at "Bobat Town" (Hobarton?).

5. **Chætospora axillaris** (Br. Prodr. 233); culmis cæspitosis prostratis foliosis subramosis, foliis distichis brevibus planiusculis, spiculis axillaribus solitariis binisve 2–3-floris, squamis glaberrimis paucis

distichis acutiusculis, setis hypogynis sub-6, nuce late elliptico-ovata trigona lævi alba stylo basi non incrassato persistente terminata.—*Fl. N. Zeal.* i. 274. *t.* 62 *A*. C. mniaroides, *Muell. in Herb. Hook.* Helothrix pusilla, *Nees, in Ann. and Mag. Nat. Hist.* vi. 457. (*Gunn*, 974.)

HAB. Marshy places near Penquite, *Gunn*, and probably common elsewhere in the Colony.—(Fl. Dec.)

DISTRIB. New South Wales: Alps of Victoria, *Mueller;* Swan River, *Drummond;* New Zealand.

Culms prostrate, rooting at the base, slender, laxly tufted, 2–5 inches long, sparingly branched, compressed. *Leaves* alternate, patent, distichous, 1–2 inches long, concave above, with grooved, convex backs. *Spikelets* much smaller than in *C. imberbis*, axillary, solitary or two together, pedicelled or almost sessile, pale, about $\frac{1}{10}$–$\frac{1}{8}$ inch long, of four or six compressed, smooth, nerveless, ovate-lanceolate, subacute scales. *Hypogynous bristles* short, scabrid. *Nut* white, smooth, broadly elliptical-ovate, trigonous, with a persistent style.

Gen. IV. GYMNOSCHŒNUS, *Nees.*

Spiculæ in capitulum terminale late bracteatum densissime congestæ, breves, 1–2-floræ; *squamis* distichis, extimis minoribus, vacuis. *Setæ* hypogynæ 3, filiformes. *Stylus* 3-fidus, basi pubescens.—Herbæ *rigidæ, robustæ;* culmis *erectis, cæspitosis, radicibus crassis;* foliis *omnibus radicalibus, rigidis, coriaceis, lineari-elongatis, curvis;* capitulo *magno, sphærico;* spiculis *rachi incrassata sessilibus.*

There are two described species of this genus, both South-eastern Australian. They have the technical characters of the spikelets and flowers of *Schœnus*, but differ so remarkably in habit and inflorescence from that genus, that there can be no doubt as to the propriety of keeping them distinct from it. *G. sphærocephalus* consists of a dense mass of tall, very rigid, tufted, smooth, polished culms and leaves, 2–3 feet high. Old plants form short caudices a foot high, from the summit of which the culms and leaves spread in all directions.—*Rhizome* very stout, sending down thick, tortuous fibres, as stout as a small quill. *Base of the culm* as thick as the little finger, covered with dark-brown, grooved, coriaceous leaf-sheaths, 2–3 inches long, whose margins are more or less woolly. *Leaves* a foot or more long, much longer than the culm, tortuous, rigid, narrow-linear, $\frac{1}{8}$ inch broad, convex, not grooved at the back, broadly concave in front. *Scape* or culm 3–5 feet long, compressed, perfectly smooth, rigid, solid, not jointed and naked. *Capitulum* $\frac{2}{3}$ inch in diameter, perfectly glabrous, of very numerous, short, sessile spikelets, set round a central, thickened axis. *Bracts* coriaceous, very broadly rounded, ovate, three or five at the base of the capitulum, and three or four placed amongst the spikelets; one or two sometimes bearing a short, flat, blunt lamina. *Spikelets* hard, radiating, $\frac{1}{4}$ inch long, of five or six very coriaceous, yellowish scales, with brown-black margins and apices, distichous, but rather obscurely so; outer scales short, more membranous, quadrate, bifid, with broader membranous margins, truncate; inner broadly ovate, very concave, obscurely keeled, smooth, not nerved. *Stamens* three, with short filaments, and large, broad, mucronate anthers. *Style* with a long, conical, pubescent base, jointed? on the ovary, which is elongate. *Stigmas* three. *Hypogynous bristles* three, scabrous, very slender. (Name from γυμνος, *naked*, and σχοινος, *a Rush;* in allusion to the long leafless culms?)

1. **Gymnoschœnus sphærocephalus** (Hook. fil.); foliorum vaginis lanatis, culmis compressis, capitulo globoso terminali, bracteis cum spiculis immixtis iis æquilongis late orbiculatis ovatisve obtusis, spiculis bifloris.—G. adustus, *Nees, in Ann. Nat. Hist.* vi. *p.* 47. Chætospora sphærocephala, *Br. Prodr.* 233. Xyris lævis, *Sieber*, 204 (*non Br.*). (*Gunn*, 952.) (TAB. CXLII.)

HAB. Abundant in marshes, in the poorest soil, in many parts of the Island: Lake St. Clair, and thence to Macquarrie Harbour; Circular Head, etc., *Gunn*.—(Fl. Nov.–Jan.)

DISTRIB. New South Wales and Victoria.

PLATE CXLII. Fig. 1, spikelet; 2, bract; 3, scales of spikelet; 4, stamen; 5, pistil:—*all magnified.*

Gen. V. CHORIZANDRA, *Br.*

Spiculæ in capitulum laterale bracteatum densissime congestæ, late obovatæ, compressæ, multifloræ;

squamis perplurimis, fasciculatis, undique imbricatis, omnibus floriferis, exterioribus majoribus, masculis monandris, subterminali hermaphrodito monandro. *Nux* compressa; *stylo* valido, basi subincrassato; *stigmatibus* 2, crassis, elongatis.—Herbæ *junciformes;* culmis *cæspitosis, teretibus, basi foliatis;* foliis *teretibus, basi vaginatis;* vaginis *fissis;* capitulo *atro-purpureo, excavatione culmi sessili.*

A very remarkable genus, unlike *Cyperaceæ* in habit, and quite resembling many species of *Juncus* in the tufted habit, terete culm and radical leaves, which latter have split sheaths.—*Spikelets* very densely aggregated into a globose head, which is sunk in a canal on the side of the culm, of very numerous, fasciculate scales, which are equal in length, and imbricated all round; the majority of these are male, and have each one stamen; the central flower alone is hermaphrodite, and consists of one stamen and one compressed nut, with a stout style and two stout stigmas.—*C. enodis* is a rigid, glabrous herb, a span to 18 inches high, with striated, unjointed culms and leaves, both of which terminate in subulate, almost pungent apices. *Capitulum* dark purple-black, $\frac{1}{3}$–$\frac{2}{3}$ inch in diameter, depressed, with two or three concave, very broad, coriaceous, involucrate scales at its base. *Spikelets* broadly obovate. *Scales* obovate-cuneate, all trifid, or sometimes quadrifid (more or less irregularly), the points acuminate, a little recurved; back and margins towards the apices woolly with purple hairs; inner scales much narrower and more membranous, hyaline. *Anthers* yellow. *Pistil* dark-purple. (Name from χωρις, *apart*, and *ανηρ, a man;* in allusion to the solitary stamens.)

1. **Chorizandra enodis** (Nees, Pl. Preiss. ii. 73); culmis foliisque inarticulatis gracilibus, capitulo depresse globoso exserto, squamulis 3–5-fidis obovato-cuneatis apice lanatis. (*Gunn*, 1401.)

HAB. Wet places near Georgetown, *Gunn.*—(Fl. Oct.)

DISTRIB. Victoria (Hopkins River), *Mueller;* Swan River, *Drummond.*

Gen. VI. CARPHA, *Banks et Sol.*

Spiculæ fasciculatæ, erectæ, uniflores. *Squamæ* distichæ, inferiores minores, vacuæ; 2 superiores suboppositæ, magnæ; terminali anguste lineari. *Setæ* hypogynæ 3–6, longe plumosæ, squamis æquilongæ. *Nux* stipitata, prismatica, obovata; *stylo* basi longe fusiformi, persistente; *stigmatibus* 2–3.—Herbæ *cæspitosæ;* foliis *linearibus;* culmo *tereti;* fasciculis *spicularum bractea foliacea subtensis.*

There are only three species of this genus known to me, of which the present is closely allied to *C. schœnoides* of Fuegia, and the third (*C. deusta*) is a native of New South Wales. The *C. alpina* is a tufted, grass-like herb, with numerous, rigid, narrow-linear, radical leaves, 2–4 inches long, with rather blunt apices, concave faces, and glabrous or scaberulous sides and margin.—*Culms* slender, erect, cylindric or rather compressed, a span to a foot high, with one or two leaves. *Cauline* leaves or bracts with a long, entire sheath, each bearing a peduncled, subcorymbose fascicle of large, pale-yellow, shining spikelets; lower fascicle (when two) on a long, slender, inclined peduncle. *Spikelets* $\frac{1}{2}$ inch long, of about five or six distichous scales, of which the two lowest are small, subulate, lanceolate, and empty; the two succeeding are very large, opposite, concave and compressed, lanceolate, acuminate, scarious, enclosing one flower between them; the uppermost scale is linear and small. *Hypogynous setæ* in two series, as long as the longest scales, densely plumose. *Nut* prismatic, with a short style, having a long, conical, persistent base. *Embryo* large, almost globose, but broadly conical at both ends, and hence somewhat shortly fusiform, its lower half surrounded with a layer of indurated albumen, its upper small, with softer albumen above it. (Name from καρφος, *chaff;* in allusion to the glumaceous texture of the scales.)

1. **Carpha alpina** (Br. Prodr. 230); foliis rigidis anguste linearibus obtusiusculis supra concavis, fasciculis spicularum subcorymboso-paniculatis, inferioribus gracile pedicellatis squamis pallidis, setis hypogynis 6 longe plumosis apicibus nudis.—*Fl. N. Zeal.* i. 273. (*Gunn*, 1485.)

HAB. Not uncommon on the mountains, alt. 4–5000 ped.—(Fl. Dec., Jan.) (*v. v.*)

DISTRIB. Mountains of Victoria and New Zealand.

Gen. VI. ELÆOCHARIS, *Br.*

Spicula solitaria, terminalis, elongata, erecta, nuda; *squamis* undique imbricatis, conformibus, plerisque fertilibus; *setæ hypogynæ* 4–12 (rarius 0). *Nux* lenticularis v. trigona; *stylo* basi bulboso, cum ovario articulato, deciduo; *stigmatibus* 2–3.—Herbæ *paludosæ*; culmis *aphyllis, basi vaginatis.*

A very common genus of marsh plants, found in all parts of the world, and many of the individual species have also a very extended geographical distribution.—All are leafless, erect herbs, with tufted, generally terete culms, sheathed at the base, and simple, erect, lanceolate or cylindrical, solitary, terminal spikelets. *Scales* numerous, imbricated all round, most or all of them fertile. *Flowers* of three stamens and one pistil, surrounded by hypogynous bristles. *Style* with a bulbous base, jointed on to the nut, deciduous; *stigmas* 3. (Name from ελος, *a marsh*, and χαιρω, *to delight in.*)

1. **Elæocharis sphacelata** (Br. Prodr. 244); robusta, culmis articulatis intus vacuis, spicula cylindrica, squamis elliptico- v. obovato-oblongis margine sphacelatis.—*Fl. N. Zeal.* i. 269. (*Gunn*, 1404.)

HAB. Abundant in lagoons near Formosa, etc.—(Fl. Nov.)

DISTRIB. Throughout Australia, New Zealand, and the Pacific Islands.

Culms 2–4 feet high, $\frac{1}{3}$–$\frac{1}{2}$ inch in diameter, hollow, with numerous transverse septa. *Spikelet* 2 inches long. *Scales* blunt, broadly-oblong or elliptic-oblong, with brown edges. *Nut* very broadly obovate, compressed, with thickened margins. *Hypogynous bristles* about eight, covered with retrorse setæ.

2. **Elæocharis gracilis** (Br. Prodr. 224); culmis gracilibus inarticulatis cæspitosis, vagina ore truncata, spica cylindracea, squamis ovato-lanceolatis, setis hypogynis 4–8 ovario longioribus, nuce compressa, stigmatibus 3.—E. mucronulata, *Nees, Ann. and Mag. Nat. Hist.* vi. 46. *An* E. palustris, *L.*, var.? (*Gunn*, 573.)

Var. *β*; squamis acutis.—E. acuta, *Br. l. c.*

HAB. Abundant in marshy places throughout the Island.—(Fl. Oct.–Jan.) (*v. v.*)

DISTRIB. Extratropical Australia and New Zealand.

I can find no characters to separate this plant from the European *E. palustris*, except the three stigmas, and the occasional presence of a small mucro to the mouth of the sheath; this mouth is either transversely or obliquely truncate in both European and Tasmanian specimens. The scales are more often obtuse than acute, and the hypogynous bristles, though constantly eight in Tasmanian specimens, vary from four to eight in Australian and New Zealand ones. The nut is broadly obovate, pale yellow-brown, with rounded sides, in which respect and its more robust habit it differs from what I have (in the 'New Zealand Flora') assumed to be Brown's *E. gracilis*, and which has a trigonous nut.

Gen. VII. ISOLEPIS, *Br.*

Spiculæ parvæ, 1 v. plures (rarius 1), terminales v. prope apicem culmi aggregatæ, sessiles, breves, ovato-cylindraceæ; *squamis* undique imbricatis, plerisque floriferis. *Setæ* hypogynæ 0. *Nux* compressa v. trigona; *stylo* deciduo, basi non incrassato.—Herbæ (*Tasmaniæ* I. nodoso *excepto parvæ*) *cæspitosæ*; culmis *trigonis teretiusculisve, basi foliatis v. vaginatis*; foliis *angustis, subulatis subgramineisve.*

A very common and puzzling genus, found in almost all parts of the world, but most abundantly in the temperate and colder latitudes. The species are extremely difficult to discriminate, being very variable, and their characters minute and not easily expressed. About sixteen Australian species are known to me, including probably the eleven which are described in Brown's 'Prodromus,' though I am unable to determine some of the latter with confidence. The genus differs from *Scirpus* only in habit and in wanting hypogynous bristles; almost all are small, tufted, usually marsh plants, with subulate radical leaves. (Name from ισος, *equal*, and λεπις, *a scale.*)

a. *Spikelet terminal. Nut much compressed. Stamens and stigmas two.*

1. **Isolepis fluitans** (Br. Prodr. 221); culmis flaccidis ramosis foliatis natantibus, foliis lineari-setaceis canaliculatis, spiculis ovatis 3–7-floris, squamis ovato-oblongis obtusis 3-andris, nuce elliptica compressa, stigmatibus 2.—*Kunth, En.* ii. 188. Eleogiton fluitans, *Link, Hort.* i. 284. Scirpus fluitans, *Linn. Sp. Pl.* i. 71; *Eng. Bot. t.* 216. (*Gunn,* 1430.)

Var. *β*; spiculis foliorumque vaginis atro-castaneis. (*Gunn,* 1429.)

Var. *γ*. *terrestris,* F. Mueller; culmis cæspitosis abbreviatis erectis, foliis culmo æquilongis, squama inferiore elongata bracteam referente. (*Gunn,* 1413, 1420.)

Hab. Abundant in rivers and pools throughout the Island. Var. *β*. Yorktown rivulet, *Gunn*. Var. *γ*. Western Mountains and Arthur's Lakes, *Gunn*.

Distrib. Extratropical Australia, South Africa, and temperate Europe and Asia.

In its usual state this forms dense, matted, floating patches of almost capillary culms and leaves.—*Spikelets* pale, narrow-ovate, $\frac{1}{5}$ inch long. *Scales* green on the back, ovate-lanceolate or ovate-oblong, blunt; the lower empty, and sometimes produced beyond the spikelet. *Nut* compressed, white, with two styles.—In the var. *β* the spikelets and sheaths of the leaves are a dark chestnut-brown, almost black. The var. *γ*. *terrestris* so closely agrees with Brown's character of *Isolepis inundata*, that I have doubts whether it may not be a state of that plant.

2. **Isolepis crassiuscula** (Hook. fil.); culmis cæspitosis fluitantibus v. emersis erectis, spiculis ovatis castaneis, squamis 12–15 late ovato-oblongis apice rotundatis, apices versus membranaceis 3-andris, nuce elliptica valde compressa pallida, stigmatibus 2. (*Gunn,* 1431.) (Tab. CXLIII. *A*.)

Hab. Alpine situations: Arthur's Lakes and Mount Wellington, *Gunn*.—(Fl. Jan.)

Distrib. South Africa?

Much larger and stouter than *E. fluitans*, and apparently not floating, some of my specimens being evidently terrestrial, though growing in marshes.—*Culms* 6–10 inches long. *Leaves* as in *E. fluitans*, but coarser. *Spikelets* $\frac{1}{4}$ inch long, ovate, acute, of twelve to fifteen blunt scales, which are chesnut-brown above the middle. *Lower scale* fertile, sometimes with a short mucro.—Apparently identical with a South African species, whose name I cannot determine.—Plate CXLIII. *A*. Fig. 1, spikelet; 2, scale and flower; 3, pistil and stamen; 4, nut:—*all magnified.*

3. **Isolepis lenticularis** (Br. Prodr. 222); culmis cæspitosis setaceis capillaribusve basi unifoliis, spicula solitaria terminali ovato-lanceolata compressa, squamis 6–10 ovato-oblongis lanceolatisve superioribus obtusis vix carinatis diandris, nuce ovali-oblonga lenticulari valde compressa alba lævi, stigmatibus 2. (*Gunn,* 1424.) (Tab. CXLV. *D*.)

Hab. Moist ground near Formosa, *Gunn*.—(Fl. Dec.)

Distrib. New South Wales.

I have several good specimens of this plant, but from one locality only, and though from these it certainly appears to be a very distinct and well marked species, specimens from different situations may modify this opinion. It is a good deal like *I. cartilaginea*, and of the same size, habit, and aspect, but the solitary, pale-green spikelet is more terminal, larger, more ovate-lanceolate, and apparently compressed; the scales are not so carinate and nerved, more lanceolate, and the white, oval, oblong, very compressed nut is of a totally different form and character. All my specimens are diandrous, and have bifid styles.—Plate CXLV. *D*. Fig. 1, spikelet; 2, scale and flower; 3, nut:—*all magnified.*

b. *Spikelets lateral or terminal. Stamens one to three. Nut trigonous or triquetrous.*

4. **Isolepis alpina** (Hook. fil.); densissime cæspitosa, 2-pollicaris, robusta, culmis erectis spiculas longe superantibus foliis numerosis lineari-subulatis obtusis brevioribus, spicula solitaria laterali (raro ter-

minali) late ovata compressa, squamis 8–12 oblongo-ovatis obtusis viridibus castaneisve 3-andris, nuce late elliptica compresso-trigona lævi, stigmatibus 3. (*Gunn,* 1409, 1427, 1437.) (Tab. CXLIII. *B.*)

Hab. Alpine bogs: Lake St. Clair, Arthur's Lakes, and Marlborough, *Gunn.*—(Fl. Jan., Feb.)

In many respects similar to *I. crassiuscula*, but very different in habit, and especially in the lateral spikelets and trigonous nut.—*Culms* 1–2 inches high, very robust. *Leaves* numerous, longer than the culms, rigid, erect. *Spikelets* large, rarely terminal, twice as large as in *I. fluitans*, inserted far below the apex of the culm.—Plate CXLIII. *B.* Fig. 1, spikelet; 2, scale and flower; 3, pistil and stamen; 4, nut:—*all magnified.*

5. **Isolepis prolifer** (Br. Prodr. 223); laxe cæspitosa, culmis (sæpius stoloniferis) flaccidis compressis v. triquetris, capitulis polystachyis passim proliferis, spiculis oblongis pauci- v. multi-floris, squamis late ovatis obtusis acutisve carinatis v. dorso obtusis monandris, nuce trigona alba lævi punctulata striata, stigmatibus 3.—*Kunth, En.* ii. 201; *Fl. N. Zeal.* i. 271. Scirpus prolifer, *Rottb. Gram.* 55. *t.* 17. *f.* 2.

Var. *α*; rarius stolonizans, spithamæa ad pedalem, capitulis non proliferis, spiculis 5–12 cylindraceo-ovatis, squamis sub-16. I. propinqua, *Br., fid. Nees in Ann. and Mag. Nat. Hist.* vi. 46. (*Gunn,* 420.) (Tab. CXLIV. *A.*)

Var. *β*; rarius stolonizans, 4-pollicaris ad spithamæam, capitulis raro proliferis, spiculis 2–5 brevibus, squamis 6–10. (*Gunn,* 420.) (Tab. CXLIV. *B.*)

Var. *γ*; stolonizans, 4-pollicaris ad spithamæam, capitulis proliferis, spiculis 2–5 brevibus, squamis 6–10. (*Gunn,* 1418.) (Tab. CXLIV. *C.*)

Var. *δ*; stolonizans, culmis fluitantibus pedalibus et ultra, capitulis polystachyis valde proliferis, spiculis 3–8 breviusculis, squamis 6–10. (*Gunn,* 420.) (Tab. CXLIV. *D.*)

Var. *ε*; alpina, vix stolonizans, culmis cæspitosis 1–2-pollicaribus basi foliosis erectis non proliferis, spiculis 5–8 breviusculis, squamis 6–10. (*Gunn,* 1423, 1425, 1426.) (Tab. CXLIV. *E.*)

Var. *ζ*; perpusilla, culmis cæspitosis ½-pollicaribus basi foliosis, capitulis 1–2 brevibus, squamis 4–8. (*Gunn,* 1425.) (Tab. CXLIV. *F.*)

Hab. Abundant in wet places throughout the Island. Var. *ε*. Marlborough and Georgetown. Var. *ζ*. Arthur's Lakes. Vars. *γ* and *δ* often growing under water.—(Fl. all the year.) (*v. v.*)

Distrib. Tropical and extratropical Australia, New Zealand, South Africa.

A most variable plant, ½ inch to a foot high, growing in both wet and dry places, and assuming a different habit under different circumstances. The varieties enumerated above are by no means constant, except in the nut and one stamen; they run into one another in all ways, and are connected with other varieties from other countries, some of which are very much larger than these in all their parts, and some are so slender as to have capillary culms. Brown describes the spikelets as terminal, but they are truly lateral in all states, though sometimes the apex of the culm is short; he also states the culms to be leafless: this they are in many states, but in others they bear triquetrous leaves at the base.—This species may be invariably recognized by its solitary stamen, white, triquetrous, smooth nut; also by its flaccidity, stoloniferous habit, and proliferous spikelets, which vary from two to twenty in a cluster, from ⅛–⅓ inch long, and from having three to twenty green or brown scales. *Nut* white, acutely trigonous, exactly similar in all the varieties. *Stamen* 1.—Plate CXLV. *A.–F.* Varieties of *I. prolifer*. Fig. 1, scales; 2, pistil and stamen; 3, nut:—*all magnified.*

6. **Isolepis nodosa** (Br. Prodr. 221); elata, robusta, culmis tereti-compressis basi vaginatis aphyllis apice pungentibus, capitulis globosis polystachyis, spiculis ovatis densissime congestis, squamis obtusis, staminibus stigmatibusque 3, nuce compresso-trigona lævi.—*Kunth, En.* ii. 199; *Fl. N. Zeal.* i. 271. Scirpus nodosus, *Rottb. Gram.* 52. *t.* 8. *f.* 3. (*Gunn,* 979.)

Hab. Sand-hills on the northern shores of the Island, common.—(Fl. Nov., Dec.)

Distrib. Extratropical Australia, New Zealand, South Africa, and South America.

Very dissimilar to the other Tasmanian species, being robust, rigid, 2–3 feet high, and bearing a very dense globose capitulum the size of a marble. *Culms* compressed, rigid, leafless, sheathed at the base, with a pungent apex. *Spikelets* extremely numerous and very densely packed, of six to eight broad, concave, blunt, striated, pale-brown scales. *Stamens* and *stigmas* three.

7. **Isolepis setacea** (Br. Prodr. 222); pusilla, culmis setaceis striatis basi monophyllis, spiculis 1–3 ovatis lateralibus v. terminalibus, squamis acutis carinatis 2–3-andris, nuce globosa, longitudinaliter sulcata, stigmatibus 2–3.—*Kunth, En.* 193. I. margaritifera, *Nees, in Ann. and Mag. Nat. Hist.* vi. 46. (*Gunn*, 421, 976.)

Hab. Probably common in marshy places, but I have seen no specimens but those from Penquite, *Gunn*.—(Fl. Nov.)

Distrib. Extratropical Australia, South Africa, India, temperate and warm Europe and Asia.

Culms capillary, two or four inches high. *Leaves* short, very slender. *Spikelets* short, one to three, sometimes, especially when solitary, almost terminal. *Scales* six or eight, acute, keeled, and striate. *Nut* globose, deeply grooved, whitish or brown.

8. **Isolepis Saviana** (Schult. Mant. ii. 63); culmis setaceis subcapillaribusve basi monophyllis, spiculis 1–3 ovatis, squamis 3-andris obtusis carinatis sulcato-nervosis, nuce late obovata compressa obtuse trigona alba v. pallide fusca creberrime punctata (asperula).—*Kunth, En.* ii. 193. Scirpus Savii, *Spr. Syst. Veg.* i. 207; *Eng. Bot. Suppl. t.* 2782. (*Gunn*, 421.)

Hab. Abundant in moist, sandy, and marshy places.—(Fl. all summer.) (*v. v.*)

Distrib. Extratropical Australia, Europe, Canary Islands, and North Africa. (A native of England.)

My specimens agree perfectly with European ones. Very similar to *I. setacea*, being pale-green, and having, like it, often but one almost terminal spikelet; also most nearly allied to *I. pygmæa*, but that has a smaller, triquetrous, more minutely punctulate nut.—*Culms* 1–3 inches high, very slender, with one leaf at the base. *Spikelets* one to three, small, $\frac{1}{6}$–$\frac{1}{10}$ inch long, of six to eight ovate, blunt, concave, bluntly keeled, deeply striate or grooved scales. *Nut* compressed, obovate, obtusely three-angled, white or grey-brown, deeply punctate so as to look rough, its surface glistening and iridescent.

9. **Isolepis cartilaginea** (Br. Prodr. 222); culmis basi foliatis dense cæspitosis foliisque crassiusculis rigidis erectis, spiculis 3–6 (rarius solitariis) lateralibus sæpe involucratis, squamis 3-andris navicularibus profunde carinatis lateribus impressis sulcato-nervosis inferioribus mucronatis, nuce elliptica v. oblonga obtuse trigona punctulata.—*Fl. N. Zeal.* i. 271; *Nees in Plant. Preiss.* ii. 73. I. Bergiana, *Schultes, Mant.* iii. 532; *Kunth, En.* ii. 194.

Var. *α*; culmis rigidiusculis 1–4-pollicaribus, spiculis 4–6, squamarum lateribus purpureis. (*Gunn*, 582.) (Tab. CXLV. *A.*)

Var. *β*; culmis rigidiusculis 1–4-pollicaribus, spiculis 2–3, squamis pallide viridibus.

Var. *γ*; culmis gracilibus subsetaceis, spiculis 1–3, squamis pallidis. (*Gunn*, 421?) (Tab. CXLV. *B.*)

Hab. Abundant in sandy and moist places, the varieties apparently growing intermixed.—(Fl. Oct.–Dec.) (*v. v.*)

Distrib. Extratropical Australia, New Zealand, and South Africa.

A very well marked species in its common form of a short, rigid, robust, cæspitose plant, 2 inches high, with several lateral, often involucrate spikelets of deeply keeled, shining, navicular, sulcate scales, and with a pale-brown, elliptic-oblong, bluntly trigonous, not compressed, minutely punctulate nut; but the culms are sometimes slender and setaceous, like those of *I. Saviana* and *setacea*; the scales, though constant in general characters, are often wholly yellow-green; the spikelets are sometimes solitary, and have no involucre-like elongated scale at the

base. Swan River specimens are sometimes 5 inches high, with much larger spikelets. Young nuts are white, and acutely trigonous. New Zealand specimens are sometimes diandrous. Between the South African and Tasmanian individuals there is no difference whatever. This is certainly Brown's *I. cartilaginea*, though the nuts are but very minutely punctulate, not "scabriusculis," as described in the 'Prodromus,' a character which better agrees with *I. Saviana*.—PLATE CXLV. *A.* and *B.* Vars. α and γ. Fig. 1, spikelet; 2, scale and flower; 3, nut:—*all magnified.*

10. **Isolepis riparia** (Br. Prodr.); culmis cæspitosis basi unifoliis v. vaginatis subsetaceis capillaribusve, spicula solitaria laterali v. terminali brevi ovata pauciflora, squamis 5–8 late ovatis obtusis subcarinatis triandris, nuce late obovata triquetra lævi subtilissime punctulata, stigmatibus 3.—I. chlorostachya, *Nees, fid. Herb. Reg. Berol.* I. pygmæa, *Kunth, En.* ii. 191. (*Gunn*, 421, 1421, 1422, 1428, 1445.) (TAB. CXLV. *C.*)

HAB. Abundant in wet banks, ditches, rivers, marshes, etc.—(Fl. all the year.)

DISTRIB. Extratropical Australia, New Zealand, South Africa, South America.

Best distinguished by the very slender, often capillary culms, solitary, very small, lateral, or rarely terminal spikelet, of few, broad, blunt, scarcely keeled scales, and by the small, broadly obovate, compressed, triquetrous nut, which is smooth or very minutely punctulate.—*Culms* 1–4 inches high, sometimes, when growing in shaded woods, 6 inches, and then quite capillary, short and more rigid in alpine localities. *Spikelets* rarely terminal, $\frac{1}{8}$–$\frac{1}{10}$ inch long, pale yellow-green or chesnut-brown on the sides of the scales.—PLATE CXLV. *C.* Fig. 1, spikelet; 2, scale and flower; 3, nut:—*all magnified.*

Gen. IX. SCIRPUS, *L.*

Spiculæ versus apicem culmi solitariæ aggregatæ v. paniculatæ; *squamis* undique imbricatis, plerisque floriferis. *Setæ* hypogynæ squamis breviores. *Nux* compressa v. trigona, stylo deciduo basi non incrassato.—Culmi *erecti, robusti, elongati, simplices, e rhizomate crasso;* foliis *gramineis vaginæformibus v. nullis;* spiculis *magnis.*

The species of *Scirpus* are not numerous, but several are found in all temperate and many tropical parts of the globe. All are tall, water or marsh plants, with creeping rhizomes, and stout, erect, simple, generally leafy or leafless culms, bearing the inflorescence below the apex. About six Australian species are known, all of them natives of other countries.—*Spikelets* large, solitary, aggregate or panicled; *scales* numerous, imbricated on all sides. *Nut* with hypogynous bristles. (Name supposed to be that used by the Greeks for this or some other marsh plant.)

1. **Scirpus triqueter** (Linn. Mant. 29); culmo triquetro basi 1–2-phyllo, foliis acute carinatis, spiculis lateralibus solitariis v. dense glomeratis ovatis, squamis aristatis vel mucronatis apice fimbriatis.—*Br. Prodr.* 223; *Eng. Bot.* 1694; *Fl. N. Zeal.* i. 269. (*Gunn,* 1402.)

HAB. Near Hobarton, in brackish water, and probably elsewhere, commonly.—(Fl. Nov.) (*r. v.*)

DISTRIB. Extratropical Australia, New Zealand, Europe, and North Africa, and other temperate and subtropical countries.

Culms 2–3 feet high, slender, trigonous, channelled down the front, with one or two trigonous leaves at their base. *Spikelets* one or more, $\frac{1}{2}$–1 inch long, ovate, dark red-brown. *Scales* membranous, oblong or ovate-lanceolate, usually bifid at the apex, the lowest broadest, with a green mucro, the upper aristate, most of them fimbriate at the margin. *Nut* broadly oblanceolate or fusiform. *Stigmas* two or three. *Setæ* three, longer than the nut, beset with strong recurved bristles. *Stamens* with a rough terminal mucro.

2. **Scirpus maritimus** (Linn. Sp. Pl. i. 74); culmo triquetro folioso, foliis gramineis culmum superantibus, spiculis subcorymbosis sessilibus pedunculatisque, involucro polyphyllo, squamis scariosis bifidis integerrimisve, nuce trigona.—*Br. Prodr.* 224; *Eng. Bot. t.* 542; *Fl. N. Zeal.* i. 268. (*Gunn,* 419.)

HAB. Abundant in salt and brackish marshes, etc.—(Fl. Nov., Dec.) (*v. v.*)

DISTRIB. Throughout Australia, New Zealand, and all temperate and tropical countries of both hemispheres. (Native of England.)

A larger and coarser plant than *S. triqueter*, with a trigonous culm, flat grassy leaves, and a corymbose, compound panicle of large, ovate spikelets, surrounded by several involucral leaves; this inflorescence is usually described as terminal, but one of the so-called involucral leaves is always erect, and is manifestly as much the continuation of the culm as is that of *S. triqueter*.—*Spikelets* pale-brown, $\frac{1}{2}$–1 inch long. *Scales* very numerous, membranous or scarious, oblong, entire or bifid, with an often recurved arista. *Nut* large, pyriform, compressed, with a fusiform terminal mammilla, shining, punctulate. *Setæ* unequal and variable. *Anthers* with a rough terminal mucro. *Stigmas* two or three.

Gen. X. LEPIDOSPERMA, *Labill.*

Spiculæ parvæ, in paniculas spicasve divisas terminales dispositæ, 1–2-floræ, monospermæ; *squamis* undique imbricatis, plerisque vacuis. *Squamulæ* hypogynæ 6, crassæ, basi carinatæ, nucis basi adhærentes. *Nux* ventricosa, calva, obtusa; *stylo* deciduo, basi simplici.—Radix *perennis, sæpe lignosa;* culmis *nudis, simplicibus, sæpissime late ancipitibus, compressissimis, rarius teretibus angulatisve, rigidis, marginibus scaberulis, sectantibus, basi foliis equitantibus cinctis;* panicula *basi vagina membranacea appressa cincta;* spiculis *duris, fuscis.*

A very extensive genus, almost confined to extratropical Australia, a few species only being found in New Zealand and the Malay Islands. Brown describes nineteen species, and I find upwards of fifty in the Hookerian Herbarium, by far the greater number being natives of South-western Australia. The larger species form a considerable proportion of the so-called Cutting-Grasses of the forest and bush. Nees von Esenbeck, in 'Plantæ Preissianæ,' has referred some South-western Australian species to Brown's Tasmanian ones, trusting to the descriptions in the 'Prodromus;' but as Nees had no opportunity of comparing authentic specimens, and I find great differences between all the Tasmanian and South-western Australian species, I have refrained from quoting the 'Plantæ Preissianæ.' I much doubt whether I am correct as to *L. concava, lateralis*, and *squamata*, of which the specimens in the British Museum are scarcely authentic, and hardly agree with the descriptions in the 'Prodromus.'—Coarse, rigid, often tall, perennial Sedges, with simple, erect, harsh culms, which are most often flat, with two cutting edges, but in some species square or terete, bearing a few equitant leaves at the base, and terminated by a branched, compressed panicle of very insignificant spikelets. *Spikelets* sessile, short, enclosed in an aristate bract, of several imbricating scales, one- or two-flowered, the lower flower alone fertile. *Scales* chartaceous, hard. *Nut* ventricose, coriaceous or osseous, surrounded at the base with six connate, persistent, coriaceous, often thickened scales. *Style* with a simple base. (Name from λεπις, *a scale*, and σπερμα, *a seed*.)

a. *Culms flat or very much compressed.*

1. **Lepidosperma gladiata** (Lab. Nov. Holl. i. 15. t. 12); 2–4-pedalis, culmo $\frac{1}{2}$–$\frac{2}{3}$ poll. lato complanato, axi utrinque elevato intus solido, marginibus foliisque lævibus, panicula coarctata, ramis compositis, spiculis imbricatis, squamis ovatis acutis puberulis.—*Br. Prodr.* 234; *Kunth, En.* ii. 316. L. ensatum, *Nees, Ann. and Mag. Nat. Hist.* vi. 47. (*Gunn*, 984.)

HAB. Common on sand-hills near the sea, on the north coast, *Gunn*.—(Fl. Nov.)

DISTRIB. Victoria, *Robertson;* New South Wales, *Brown*.

A tall, coarse, but not cutting species. *Culm* compressed, 2–3 feet high, $\frac{1}{3}$–$\frac{3}{4}$ inch broad, with smooth margins, and a thickened, convex axis, solid within. *Panicle* oblong, flattened, 3 inches long, much divided. *Spikelets* puberulous, crowded.—I have seen no Western Australian specimens of this species.

2. **Lepidosperma elatior** (Lab. Nov. Holl. i. 15. t. 11); 4–8-pedalis, culmo $\frac{1}{3}$ poll. lato compresso utrinque convexiusculo intus solido marginibus foliisque scabris, panicula elongata effusa, ramis

compositis, spiculis subfasciculatis, squamis ovatis ovato-lanceolatisque acuminato-aristatis puberulis.—*Br. Prodr.* 234; *Kunth, En.* ii. 317. Chætospora concava, *Nees, in Ann. and Mag. Nat. Hist.* vi. 47. (*Gunn,* 575.)

HAB. Common in forests, and in damp soil, throughout the Island.—(Fl. Oct.) (*v. v.*)

DISTRIB. Victoria.

A tall, slender species, very dangerous to handle, from the keenly cutting edges of the culms and leaves.—*Culm* often 8 feet high, about $\frac{1}{3}$ inch broad, compressed, thickened rather suddenly from the margins towards the middle equally on both surfaces. *Panicle* 6–12 inches long, slender, effuse, with long, nodding lateral branches. *Spikelets* in pedicelled fascicles. *Scales* about $\frac{1}{4}$ inch long, aristate-mucronate, puberulous.

3. **Lepidosperma longitudinalis** (Lab. Nov. Holl. i. 16. t. 13); 3–5-pedalis, culmo $\frac{1}{3}$ poll. lato complanato intus vacuo marginibus compressissimis lævibus, panicula elongata coarctata, ramis subsimplicibus, spiculis dense congestis, squamis ovato-oblongis obtusis apiculatisve puberulis.—*Br. Prodr.* 234; *Kunth, En.* ii. 317. (*Gunn,* 1395.)

HAB. Sandy wet places near the sea: Georgetown and Hobarton, etc., common.—(Fl. Sept.) (*v. v.*)

DISTRIB. Victoria.

The hollow culms at once distinguish this species from all its Tasmanian allies.—*Culms* 3–5 feet high, about $\frac{1}{3}$ inch broad, with quite smooth (scarcely scabrous, as described by Brown) margins, and a much compressed, broad, hollow axis, reaching nearly to the margins. *Panicle* erect, 4–7 inches high, sparingly branched, the branches erect. *Spikelets* fascicled, pubescent. *Scales* ovate-oblong, blunt, apiculate.

4. **Lepidosperma Oldfieldii** (Hook. fil.); 4–6-pedalis, culmo $\frac{1}{4}$ poll. lato compresso utrinque convexo intus solido marginibus foliisque scaberulis, panicula elongata contracta erecta, ramis brevibus remotis compositis, spiculis fasciculatis, squamis ovatis aristato-acuminatis. (TAB. CXLVI. *A.*)

HAB. New Norfolk, *Oldfield.*

Similar in many respects to *L. elatior*, but a smaller and more slender species, with a different panicle, which is very long (6–18 inches), of few distant, erect branches, $1\frac{1}{2}$–2 inches long, covered with fascicled chesnut-brown spikelets. *Spikes* aristato-acuminate, keeled, recurved, giving the spikelets a subsquarrose appearance. The edges of the culms are very scabrous, and cut severely.—PLATE CXLVI. *A.* Fig. 1, spikelet; 2, scale and flower; 3, pistil and stamens:—*all magnified.*

5. **Lepidosperma concava** (Br. Prodr. 234); 3–4-pedalis, culmo $\frac{1}{3}$ poll. lato compressissimo hinc concaviusculo marginibus foliisque scabris, panicula erecta elongata, ramis suberectis simpliciusculis, spiculis alternis brevibus, squamis ovatis carinatis aristato-acuminatis.—*Kunth, En.* ii. 316. L. lineare, *Sieb. Agrost. n.* 9. L. longitudinalis, *Nob. in Fl. N. Zeal.* i. 279, *non Lab.* (*Gunn,* 576, *in part.*) (TAB. CXLVI. *B.*)

HAB. Stony dry places: near Launceston, *Gunn,* and probably common elsewhere.—(Fl. April?)

DISTRIB. New South Wales, Victoria, and New Zealand.

A rather slender species, but known by its very thin, flat culm, which is rather concave on one side, and elongate panicle with alternate spikelets.—*Culms* 3–4 feet high, about $\frac{1}{4}$–$\frac{1}{3}$ inch broad, with scabrid, cutting margins. *Panicle* erect, pale, often a span long, elongated, flexuous, with rather long, erect, alternate branches. *Spikelets* solitary, subalternate. *Scales* ovate-acuminate.—I have seen no good authentically-named specimens of this. Those so called in the British Museum have the involucral bract as long or longer than the panicle, and best accord with Brown's character of *L. lateralis*, and belong to the species I have so called.—PLATE CXLVI. *B.* Fig. 1, spikelet; 2, scale and flower; 3, pistil and stamens:—*all magnified.*

6. **Lepidosperma lateralis** (Br. Prodr. 234); robusta, 1–2 pedalis, foliis numerosis, culmo $\frac{1}{4}$ poll.

lato compressissimo hinc plano inde convexiusculo marginibus scabris, panicula coarctata ovato-lanceolata subdensa involucro breviore v. rarius longiore, ramis brevibus subsimplicibus, spiculis alternis approximatis, squamis ovatis acuminato-aristatis puberulis.—*Kunth, En.* ii. 316. L. squamatum, *Lab. fid. Nees in Ann. and Mag. Nat. Hist.* vi. 47. (*Gunn*, 983.) (Tab. CXLVII. *A.*)

Hab. Sand-hills: Circular Head and Georgetown, *Gunn.*—(Fl. April.)

Distrib. New South Wales and Victoria.

A short, robust species, 1–2 feet high, with broad, very flat leaves and culms for the size of the species, and a short panicle.—*Culms* ¼ inch broad, with scabrous margins. *Panicle* 1–2 inches long, ovate or oblong-lanceolate, with short, simple branches, bearing a few alternate but close-set spikelets. The erect, rigid, involucral leaf is generally longer than the panicle.—Of this species there are specimens in the British Museum, named *L. concava*, Br.; it is well distinguished from the plant for which I have retained that name by the short panicle and long involucral bract.—Plate CXLVII. *A*. Fig. 1, spikelet; 2, scale and flower; 3, pistil and stamens:—*all magnified.*

7. **Lepidosperma angustifolia** (Hook. fil.); gracilis, 3–4-pedalis, culmis $\frac{1}{6}$ poll. latis compressis utrinque convexiusculis marginibus asperulis, panicula elongata tenui gracili, ramis brevibus gracilibus, spiculis parvis alternis approximatis, squamis acuminatis, squamulis hypogynis lanceolatis. (*Gunn*, 576.) (Tab. CXLVII. *B.*)

Hab. Penquite, near Launceston, *Gunn.*—(Fl. April.)

A very slender species, with an erect, slender, sparingly branched panicle.—*Culms* 3–4 feet high, $\frac{1}{6}$ inch broad, bases (and sheaths of the leaves) red-brown, much compressed but concave on both surfaces, solid within, margins most minutely roughened. *Panicle* a span long, with alternate, suberect or recurved, slender branches. *Spikelets* small, $\frac{1}{10}$ inch long, alternate, approximate, with acuminate scales.—Plate CXLVII. *B*. Fig. 1, spikelet; 2, scale and flower; 3, pistil and stamens:—*all magnified.*

8. **Lepidosperma linearis** (Br. Prodr. 235); 12–18-pollicaris, foliis falcatis culmisque $\frac{1}{10}$–$\frac{1}{12}$ poll. latis utrinque convexis vix striatis marginibus læviusculis, panicula v. spica ovata composita curva, ramis brevibus paucifloris, spiculis approximatis, squamis acuminatis puberulis, squamulis hypogynis ovatis aristato-acuminatis.—*Kunth, En.* ii. 318. (*Gunn*, 1497.)

Hab. Tasmania, *Brown;* Penquite, near Launceston, *Gunn.*—(Fl. winter.)

Distrib. Victoria.

This is possibly the *L. squamata* of Labillardière, whose figure it closely resembles in habit and size, etc., but Brown describes the culms of that plant, of which I have examined specimens in the British Museum, as plane on one surface, which these are not, and the leaves as shining at the base, which also is not the case with this plant. The present is the smallest of the Tasmanian flat-culmed species; it forms large tufts 12–18 inches high, with numerous, rigid, curved, very narrow leaves, and culms $\frac{1}{10}$–$\frac{1}{12}$ inch broad, convex and striolate (not grooved) on both surfaces, and very minutely roughened at the margins. *Panicle* 1–1½ inch long, young and imperfect in my specimens, sparingly branched, and few-flowered.

9. **Lepidosperma globosa** (Lab. Nov. Holl. i. 16. t. 14); gracilis, 1–2-pedalis, foliis falcatis, culmis $\frac{1}{10}$–$\frac{1}{12}$ poll. latis utrinque convexis marginibus scaberulis, spica pauciflora composita, ramis 4–5 alternis brevissimis 2–3-floris involucris partialibus brevioribus, spiculis parvis turgidis, squamis acuminatis, nucibus trigonis, squamulis hypogynis minimis.—*Kunth, En.* ii. 318.

Hab. Recherche Bay, *Labillardière;* stony places near Brown's River, *Oldfield.*

Very similar to *L. linearis*, but less rigid.—*Leaves* falcate, margins smooth, sheaths shining. *Culm* erect, $\frac{1}{10}$–$\frac{1}{12}$ inch broad, compressed, convex on both surfaces, margins scaberulous. *Panicle*, or rather, branched spike, the smallest and fewest-flowered of the flat-culmed section, not an inch long, erect, with three or four alternate,

rather distant, short branches, each ¼ inch long, bearing two or three spikelets, shorter than the bracts from whose axils they spring. *Spikelets* small, ¼ inch long, close together. *Scales* acuminate. *Nut* trigonous, with very small hypogynous scales.

10. **Lepidosperma squamata** (Lab. Nov. Holl. i. 17. t. 16); pedalis, foliis angustis strictiusculis culmisque subæquilongis ⅛–$\frac{1}{10}$ unc. latis utrinque convexiusculis et lineis profunde sulcatis notatis, vaginis nitidis, panicula ovata, ramis paucifloris.—*Br. Prodr.* 235; *Kunth, En.* ii. 318.

HAB. Tasmania, *Labillardière, Brown.*

I have no specimens of this, which I follow Brown in referring to Labillardière's *L. squamata*, though *L. linearis*, Br., appears to me more closely to resemble Labillardière's figure. The present differs from *L. linearis* chiefly in the shining sheaths of the leaves, and slender grooves on the leaves and culms.

b. *Culm and leaves angled.*

11. **Lepidosperma tetragona** (Lab. Nov. Holl. i. 17. t. 17); culmo pedali obtuse angulato, foliis tetragonis, panicula coarctata, ramis parum divisis.—*Br. Prodr.* 235. An *Kunth, En.* ii. 319? L. australis, *Nob. in Fl. N. Zeal.* i. 279. Vauthiera australis, *A. Rich. Fl. N. Zeal.* 107. *t.* 20.

HAB. Recherche Bay, *Labillardière.*

DISTRIB. New Zealand.

I have seen no Tasmanian specimens of this species, which I have described in the 'Flora Novæ Zelandiæ' as *L. australis.*—A tufted, rigid, almost leafless, Rush-like Sedge. *Culms* 1–1½ foot high, quite smooth, irregularly three- or four-angled, compressed or tetraquetrous, striated. *Sheaths* with rigid, subulate, compressed, three- or four-angled, erect leaves, 2–8 inches long. *Spikelets* crowded, spiked or fascicled, pale-brown, forming a terminal, short, oblong capitulum ½ inch long. *Bract* shortly sheathing, with a subulate, erect point. *Bracteoles* mucronate, striate; *scales* six to eight, acuminate, terminal one with a single flower. *Stamens* and *stigmas* 3. *Hypogynous scales* six, connate into a six-lobed cup.—Kunth appears to have described *Cladium junceum* for this plant.

c. *Culm and leaves terete or nearly so.*

12. **Lepidosperma filiformis** (Lab. Nov. Holl. i. 17. t. 15); cæspitosa, gracilis, 12–18-uncialis, culmis basi polyphyllis foliisque subfiliformis strictis erectis subcompressis, spica 2–3-flora involucro æquilonga, spiculis anguste lanceolatis bracteolam aristatam subæquantibus, squamis lanceolatis acutis, squamulis hypogynis subulatis.—Chapelliera pauciflora, *Nees, fid. Mueller.* (*Gunn,* 1439.)

HAB. Recherche Bay, *Labillardière;* Arthur's Lakes, *Gunn;* wet ground near Brown's River, *Oldfield.*—(Fl. Feb.)

DISTRIB. Victoria, near Mount Abrupt, *Mueller.*

A perfectly smooth, very slender, tufted species, much resembling *Cladium Gunnii,* H.f., 12–18 inches high, with numerous slender, erect leaves at the base of the culm.—*Leaves* grooved down the front, terete or very slightly angular or compressed. *Spike* simple, ¼–½ inch long, of two or three alternate, erect spikelets, arising from the axil of an erect, subulate, involucral leaf. *Spikelet* narrow, ¼ inch long.—Mueller's specimens have an obscure groove down the culm as well as on the leaves; the nut is grey, obovate, trigonous, and the hypogynous scales are very minute.

Gen. XI. OREOBOLUS, *Br.*

Flos solitarius, glumis deciduis 2 inclusus. *Perianthium* e squamis 6 biseriatis cartilagineis, post lapsum nucis pedunculo elongato persistens. *Stamina* 3. *Stylus* deciduus; *stigmatibus* 3. *Nux* obovata, crustacea, apice areola depressa.—Planta *humilis, rigida, cæspites convexos amplos in summis montibus efformans;* culmis *divisis, foliis disticha æquitantibus v. undique imbricatis dense vestitis;* foliis *lineari-*

subulatis, strictis, ensiformibus, basi dilatatis, vaginantibus æquitantibusve; scapis *axillaribus, brevibus, compressis,* 1-*floris, post anthesin elongatis, rigidis, strictis.*

This remarkable genus is confined to the Andes, mountains of Fuegia, New Zealand, Tasmania, and Victoria, where its species form broad, dense, hard, cushion-like, bright-green patches, in bleak, open places.—*Culms* densely tufted, covered with the subulate leaves, which are equitant and distichous, or imbricating; *sheaths* shining. *Flowers* minute, solitary, pedicelled, the pedicel elongating after flowering, and forming a rigid, persistent scape. *Scales* or involucral leaves two, opposite, enclosing the flower, deciduous. *Perianth* of six ovate-lanceolate, cuspidate, coriaceous, minute scales, in two series, within which the three stamens rise. *Style* simple at the base, deciduous, with three stigmata. *Nut* crustaceous, obovate, with a broad, depressed, areolar apex, longer than the perianth-scales, which are appressed to it, and do not fall away with it, but remain on the pedicel. (Name from ορος, *a mountain,* and βωλος, *a ball.*)

1. **Oreobolus Pumilio** (Br. Prodr. 237); foliis distichis, nuce trigona.—*Kunth, En.* ii. 367. O. pectinatus, *Nob. in Fl. Ant.* i. 87. *t.* 49; *Fl. N. Zeal.* i. 275. O. distichus, *F. Muell. in Hook. Lond. Journ. Bot.* viii. 385. (*Gunn,* 1435.)

HAB. Summits of all the mountains, alt. 3–5000 feet.—(Fl. Jan.) (*v. v.*)

DISTRIB. Mount Hotham, Victoria, *Mueller;* mountains of New Zealand and Lord Auckland's group.

The leaves of the Tasmanian specimens are often shorter and blunter than the New Zealand and Victoria ones, but I find that they vary greatly, and I can discover no other difference.

Gen. XII. CLADIUM, *Br.*

Spiculæ parvæ, in paniculas spicasve divisas terminales dispositæ, 1–3-floræ, monospermæ; *squamis* undique imbricatis, plerisque vacuis. *Squamulæ* hypogynæ 0. *Filamenta* post anthesin non elongata. *Nux* trigona, apice bulboso-incrassata, rarius simplici.—Radix *perennis;* culmis *erectis, simplicibus, foliisque teretibus angulatis v. ancipitibus;* panicula *basi ramisque basi bracteatis;* bracteis *interdum spathaceis.*

It is impossible to define what the limits of this genus should be, except by examining a vast number of Australian species, and *Cyperaceæ* of many countries, which are more or less allied to these, and which have on various grounds been removed from it, and referred to *Chapelliera, Baumea, Vincentia,* and other genera. The Tasmanian and all of the Australian species which I have examined, and which have been referred by Brown to *Cladium,* may be retained in that genus, for they form a sufficiently natural assemblage, most nearly allied to *Lepidosperma,* but differing in habit, in never having the sharp-edged cutting leaves and culms of that genus, in wanting the hypogynous scales attached to the base of the nut, and in having a thickened top to the nut in most species. As in *Lepidosperma,* the culms and leaves are flat and two-edged, or terete, or angled, but whereas the majority of *Lepidospermæ* are two-edged, this is an exceptional character in *Cladium.* From *Gahnia, Cladium* is distinguished by its less rigid habit, and the filaments not being persistent; but *C. Filum* has the habit of *Gahnia,* and *C. schœnoides* has that of *Lepidosperma linearis.* About twenty Australian plants are known to me that I should refer to *Cladium.* (Name from κλαδος, *a branch;* from the branched inflorescence of the European species.)

a. *Culms and leaves terete or angled.*

1. **Cladium glomeratum** (Br. Prodr. 237); culmis teretibus, foliis elongatis tereti-subulatis caulinis abbreviatis, panicula coarctata, spiculis 2–3-floris fasciculatis congestisve, fasciculis paniculatis, bracteis spathaceis, squamis ovatis acuminatis ciliolatis dorso scaberulis, nuce ovato-trigona lævi.—*Kunth, En.* ii. 304; *Fl. N. Zeal.* i. 275. Cladium dubium, *Nees, Sieb. Agrost. n.* 5. (*Gunn,* 1013, 1398.)

HAB. Abundant in clayey, sandy, and moist places generally.—(Fl. Dec.) (*v. v.*)

DISTRIB. New South Wales and Victoria; New Zealand.

Culms stout, tufted, 2 feet high, glabrous, terete, not jointed, soft, with several leaves at the base, and one or more above. *Leaves* terete, subulate. *Panicle* contracted, 2–4 inches long, with membranous, spathaceous bracts. *Spikelets* very numerous, fascicled, with dark, red-brown scales. *Nut* three-angled, polished.

2. **Cladium laxiflorum** (Hook. fil.); culmis teretibus, foliis elongatis tereti-subulatis caulinis nullis, panicula breviuscula subramosa pauciflora, spiculis subalternis unifloris, squamis ovato-lanceolatis acutis glabris, bracteis subspathaceis, nuce obovoidea turgida apice vix incrassata. (TAB. CXLVIII. *A.*)

HAB. Swamps near New Norfolk, *Oldfield.*

This very distinct species resembles the Australian *C. glomeratum*, Br., in the terete culms and radical leaves, but it is smaller, has no leaf on the sheath or the culm, and the inflorescence is very different. *Panicle* 1½–2 inches long, of three or four few-flowered branches, arising from spathaceous, long, acuminate bracts. *Spikelets* small, few, not fascicled. *Scales* pale red-brown, quite glabrous, acute. *Nut* broadly obovoid, somewhat trigonous, with an obscurely thickened, grooved, blunt apex.—PLATE CXLVIII. *A.* Fig. 1, spikelet; 2, scale and flower; 3, pistil; 4, nut:—*all magnified.*

3. **Cladium junceum** (Br. Prodr. 237); aphyllum, culmis gracilibus strictis teretibus basi et sub apice vaginatis, vaginis ungue brevi verticali lateraliter compresso terminatis, spiculis spicatis paucis subgeminis sessilibus unifloris, squamis oblongo-lanceolatis acutis dorso scaberulis, nuce trigona obovoidea apice incrassata hemisphærica puberula.—*Kunth, En.* ii. 304. Lepidosperma striata, *Herb. Mus. Brit. et Nob. in Fl. N. Zeal.* i. 279, *non Br.* (*Gunn*, 969.)

HAB. Abundant in wet, sandy, and heathy places in the northern parts of the Island.—(Fl. Nov., Dec.) (*v. v.*)

DISTRIB. New South Wales, Victoria, and New Zealand.

A densely tufted, slender, wiry species, with long, stout, sheathed runners, recognized at once by the terete, naked, leafless culms, which bear at the base a long appressed sheath, terminated by a short, laterally flattened, sickle-shaped claw or leaflet. The inflorescence is a very short, simple, or sparingly branched, few-flowered spike, about an inch long.—I erroneously referred this plant to *Lepidosperma striata* in the 'New Zealand Flora,' from finding it so named in the British Museum Herbarium.

4. **Cladium Gunnii** (Hook. fil.); culmis nudis gracillimis strictis foliisque paucis æquilongis teretibus lævibus basi vaginatis, vaginis appressis obtusis, panicula gracili, ramis 1-floris brevibus alternis remotis, bracteis aristatis, squamis lanceolatis acutis glabris, nuce lævi ovoidea breve stipitata obscure tricostata apice in mamillam crassam abeunte supra basin subconstricta.—Gahnia sulcata, *Mueller?* (*Gunn*, 1498.) (TAB. CXLVIII. *B.*)

HAB. Near Formosa, *Gunn.*—(Fl. Dec.)

DISTRIB. ? Victoria, *Mueller.*

Culms quite leafless above, very slender, terete, wiry, densely tufted, 1–2 feet high. *Leaves* as long as the culms, also terete, subulate. *Sheaths* red, long, with acute apices. *Panicle* 1–3 inches long, very slender, simple, few-flowered, with erect, alternate, rather short branches, arising from small, aristate bracts, and bearing one or two small spikelets. *Scales* pale red-brown, linear-lanceolate, acute. *Nut* turgid, with a short pedicel, obscurely constricted above the base, its sides smooth and polished, dark-brown, with three obscure ridges; apex thickened, but not conspicuously so.—This is very nearly allied indeed to *Gahnia sulcata*, Mueller, if it be not the same plant; but it is more slender, and the branches of the panicle are shorter.—PLATE CXLVIII. *B.* Fig. 1, spikelet; 2, scale and flower; 3, pistil; 4, nut:—*all magnified.*

5. **Cladium tetraquetrum** (Hook. fil.); robustum, culmis vaginatis compressis, foliis radicalibus acute

tetraquetris compressis, caulino lamina brevi ensiformi, panicula subcoarctata composita, spiculis congestis, squamis ovato-lanceolatis acuminatis ciliatis, nuce turgida subtrigona rugosa mamilla conica terminata. (*Gunn*, 1396, 1399.) (TAB. CXLIX.)

HAB. Common in moist places throughout the Island.—(Fl. Dec.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

Culms 18 inches to 2 feet high, robust, terete, compressed, and obscurely four-angled. *Radical leaves* numerous, stout, curved, rigid, acutely tetraquetrous, with striated faces. *Panicle* contracted, 2–3 inches long, of numerous, congested, dark red-brown, shining spikelets. *Scales* ciliated. *Nut* rugose.—PLATE CXLIX. Fig. 1, spikelet; 2, scale and flower; 3, pistil; 4, nut:—*all magnified.*

b. *Culms flattened.*

6. **Cladium schœnoides** (Br. Prodr. 237); culmis aphyllis foliisque equitantibus plano-compressis lævibus, vaginis imberbibus, spica subcomposita, spiculis 1-floris fasciculatis lanceolatis, squamis anguste lanceolatis glaberrimis, nuce obovoidea trigona apice truncata.—*Kunth, En.* ii. 305. Schœnus acutus, *Lab. Nov. Holl.* i. 18. *t.* 18. (*Gunn*, 1397.)

HAB. Dry heathy places: Circular Head, *Gunn;* Cheshunt, *Archer;* New Norfolk, *Oldfield.*—(Fl. Nov.)

DISTRIB. New South Wales, Victoria, and Swan River.

Much the smallest Tasmanian species, about a span high; very similar to *Lepidosperma globosa* and *linearis.*—*Rhizome* stout, creeping, scaly. *Leaves* equitant, all radical, compressed, almost flat, longer than the culm, which is also compressed, and of about equal breadth ($\frac{1}{10}$ inch). *Panicle* simple, 1 inch long; the branches, being few, short, and bearing fascicles of sessile spikelets, give it almost the appearance of a spike.

c. *Culms terete. Leaves plane or involute.*

7. **Cladium Filum** (Br. Prodr. 237); culmis teretibus foliosis, foliis involutis apice filiferis culmum superantibus, panicula elongata coarctata foliosa, bracteis longissime aristatis foliosisve, spiculis dense glomeratis, glomerulis alternis, squamis ovato-acuminatis exterioribus aristatis triandris v. tetrandris, nuce lineari trigona apice simplici acuta.—*Kunth, En.* ii. 305; *an Nees in Plant. Preiss.* ii. 87? Schœnus Filum, *Lab. Nov. Holl.* i. 18. *t.* 19.

HAB. Abundant in clay-soil about Hobarton and elsewhere.—(Fl. Nov.) (*v. v.*)

DISTRIB. South-eastern Australia.

Culms terete, leafy, 2–4 feet high. *Leaves* very long, slender, involute, slightly scabrous at the margins, with long, black sheaths. *Panicle* 3–8 inches long, slender, of alternate glomeruli an inch long, consisting of numerous crowded spikelets. *Scales* ovate-lanceolate; outer aristate; inner acuminate. *Stamens* three (four according to Brown). *Nut* pale, linear, trigonous, mucronate.

8. **Cladium Mariscus** (Br. Prodr. 236); culmo elato tereti lævi folioso, foliis planiusculis carina marginibusque asperis, panicula decomposita foliosa, spiculis capitato-glomeratis, floribus 3-andris, nuce elliptico-ovoidea mucronata.—*Eng. Bot. t.* 950; *Kunth, En.* ii. 303.

HAB. Tasmania, *Brown.*

DISTRIB. Australia, Polynesia, India, Europe, America, Africa? (A native of England.)

I have seen no Tasmanian specimens of this very widely-diffused species. It may be readily known by its very leafy habit, scabrous keel and margins of leaves, much widely branched panicle, with divaricating branches, and the subcapitate, pale-brown spikelets.—*Nuts* pale-brown, with an acuminate apex.

Gen. XIII. GAHNIA, *Forst.*

Spiculæ parvæ, 1-floræ, in paniculam terminalem ramosam sæpe effusam dispositæ; *squamis* undique imbricatis, intima minima florem involvente. *Filamenta* 3, 4 v. 6, post anthesin elongata, persistentia. *Nux* obtuse trigona; *stigmatibus* divisis indivisisve.—Herbæ *rigidæ, erectæ*; culmis *foliosis*; foliis *involutis, longe acuminatis.*

A genus of erect, coarse, rigid, leafy Sedges, chiefly natives of Australia, Tasmania, and New Zealand, but there are a few Malayan and Pacific Island species. It is very closely allied to *Cladium*, but differs in the elongated, persistent filaments, by which the nut is often suspended after it has fallen away from the spikelet.—*Nut* very hard, obscurely trigonous; apex thickened; inner walls in some species grooved transversely, in others very slightly so, or quite even. *Styles* three, undivided or branched. (Named in honour of *Dr. Henry Gahn*, a Swedish botanist.)

§ 1. Lampocarya.—*Seed not transversely grooved.*

1. **Gahnia trifida** (Lab. Nov. Holl. i. 89. t. 116); foliis bracteisque asperis apice longe filiformibus, panicula coarctata interrupta, spiculis dense capitato-congestis, squamis longe acuminatis, staminibus 3, stigmatibus indivisis, nuce atra obtuse trigona obovoidea mucronata, semine lævi.—Lampocarya hexandra, *Br. Prodr.* 238. (*Gunn,* 335.)

Hab. Tasmania, *Labillardière, Gunn.*

Distrib. South-eastern Australia.

I have a very small Tasmanian fragment of this plant, gathered by Gunn, but excellent ones collected in Victoria (as *Cladium Filum*) by Mueller. The short, obovoid, black nut, and the long filaments of the stamens, which vary from three to four and six, distinguish it from *Cladium Filum,* which it most closely resembles in many respects. —I have restored this plant to *Gahnia*, where Labillardière placed it, the genus *Lampocarya* appearing to me to be untenable, some plants being quite intermediate in characters between it and *Gahnia*. The present species further unites *Gahnia* with *Cladium*, through *C. Filum*. None of my specimens are hexandrous, as Labillardière's appear to have been, whence Brown gave it the specific name of *hexandra*.

§ 2. Gahnia.—*Nut osseous. Seed transversely grooved.*

2. **Gahnia psittacorum** (Lab. Nov. Holl. i. 89. t. 115); culmo robusto elato, foliis scabridis echinulatisve, panicula elongata interrupta decomposita atra, squamis plurimis obtusis, filamentis 6 corrugatis, stigmatibus bifidis, nucibus obovoideis rubris nitidis apice areola sphacelata, semine transverse sulcato. —*Br. Prodr.* 238. (*Gunn,* 982.)

Hab. Abundant in forest land, etc., throughout the Island.—(Fl. Dec.) (*v. v.*)

Distrib. New South Wales and Victoria.

A tall, very handsome Sedge, 4–8 feet high, forming large clumps, extremely dangerous from the severe ragged cuts its coarse, sharply scabrid foliage inflicts if drawn across the hand; easily known by its great size, stout, solid, cylindrical culms, as thick at the base as the middle finger, long leaves, and long black panicle of innumerable spikelets, which have black, blunt, closely imbricated scales, six long, crumpled, twisted filaments, and bright red, polished nuts.

3. **Gahnia melanocarpa** (Br. Prodr. 239); culmo gracili, foliis culmum superantibus echinulatis, panicula breviuscula coarctata ramosa, squamis acutis, staminibus 3, stigmatibus indivisis, nucibus atris. (*Gunn,* 1400.)

Hab. Tasmania, *Brown;* near Hobarton, *Gunn.*—(Fl. Nov.)

Distrib. New South Wales and Victoria.

I have only seen two specimens of this species, both rather immature.—It is a small plant, 2–3 feet high, with slender stems, very long, involute leaves, as sharply roughened on the surface as those of *G. psittacorum*, and a small, contracted, brown panicle. *Scales* all acute. *Stamens* three.

Gen. XIV. CAUSTIS, *Br.*

Spiculæ 1–2-floræ, paniculatæ; *squamis* undique imbricatis, intima florem involvente. *Filamenta* 3–5, brevia. *Nux* ventricosa, basi bulbosa, rostrata; *stylis* bi-trifidis; *semine* lævi.—Herbæ *duræ, aridæ, rigidæ, facie* Restiacearum; culmis *aphyllis, ramosis, semiteretibus, vaginatis;* vaginis *integris;* ramis *sæpe sphacelatis, hinc in mucronem concolorem subulatum productis, ultimis foliiformibus;* paniculis *axillaribus terminalibusque, pedunculatis;* pedunculis *vagina inclusis.*

An Australian genus of very remarkable-looking plants, resembling *Restiaceæ* from having semiterete, leafless stems and branches, and discoloured sheaths. About four species are known to me, all of them natives of Australia.—*Rhizome* very stout and woody. *Culms* much branched, rigid; branches often curved, the terminal ending in subulate points. *Spikelets* one-flowered, in branched, peduncled, axillary and terminal panicles, whose peduncles are enclosed in the sheaths. *Outer scales* larger than the inner, imbricated all round, acuminate; upper alone bearing one hermaphrodite flower. *Stamens* 3–5, included. *Nut* terminated by the bulbous base of the style. (Derivation of name unknown to me.)

1. **Caustis pentandra** (Br. Prodr. 239); rhizomate crasso repente squamoso, culmis e basi ramosis, ramis curvis rigidis semiteretibus, squamis apice subulatis, staminibus 5. (*Gunn*, 1443.)

HAB. Sandy heaths: in the northern parts of the Island, *Gunn.*—(Fl. Dec.?)

DISTRIB. New South Wales and Victoria.

Gen. XV. CAREX, *L.*

(*Auctore cl. F. Boott, M.D.*)

Spiculæ amentiformes (v. flores spicati), unisexuales v. androgynæ; *squamæ* 1-flores, undique imbricatæ. *Flores* unisexuales. MASC. *Perianthium* 0. *Stamina* 3. FŒM. *Perianthium* (perigynium) utriculus compressus, apice contractus, ore coarctato. *Stigmata* 2–3, exserta. *Nux* perianthio aucto inclusa.—Herbæ *pleræque foliosæ, gramineæ, perennes;* culmis *sæpius triquetris;* spicis amentisve *paniculatis, rarius solitariis.*

One of the largest genera of flowering plants, containing upwards of six hundred species, found in all parts of the globe, especially abounding in temperate countries and subalpine districts; some of the species have very wide ranges. Nearly twenty Australian and Tasmanian species have been investigated by my friend Dr. Boott, who has made this fine genus his especial study, and who alone has an intimate knowledge of its species and their distribution; he has favoured me with descriptions of the Tasmanian ones, as he did with the Antarctic and New Zealand species.—The genus *Carex* may be known by its panicled, rarely solitary, amentiform spikelets of imbricating, one-flowered scales. These spikelets are unisexual, or bear both male and female flowers, but on different parts. Male flowers of three stamens; female of a compressed ovary, with two or three stigmas enclosed in a utricular perianth, from whose contracted mouth the stigmas project. (Name of unknown derivation.)

§ a. *Spike solitary, simple.*

1. **Carex Archeri** (Boott); spica simplici triflora! androgyna apice inconspicue mascula fusco-purpurea; stigmatibus 3; perigyniis elliptico-lanceolatis obtuse triquetris sensim cylindrico-rostratis, ore integro, nervis marginalibus superne dentatis, squama ovato-lanceolata ferruginea margine hyalina infima foliiformi plus minus elongata latioribus duplo vel foliis triplo brevioribus.—(*Archer, n.* 71.) (TAB. CLV. *A.*)

Hab. Cuming's Head, *Archer.*

Culmus foliaque capillacea. *Spica* flosculo masculo unico, et fœmineis 2 contiguis. *Squama* mascula lanceolata, involuta. *Stamina* 3.—Ad *C. Backii* accedit.

A very small, slender plant, 4–6 inches high, with a solitary, minute, three-flowered, androgynous spike.—Plate CL. *A.* Fig. 1, spike; 2, male scale and stamen; 3, female ditto and perigynium; 4, perigynium:—*all magnified.*

§ b. *Spike compound, composed of several androgynous spikelets. Stigmas* 2.

* *Spikelets with male flowers below.*

2. **Carex inversa** (Br. Prodr. 242); spiculis 2–3 (rarius 1) androgynis basi masculis obovatis arcte contiguis pallidis longe bracteatis; perigyniis ovalibus rostratis bidentatis superne margine acutis serratis nervosis appressis, squamam ovatam acuminatam cuspidatam subæquantibus; stigmatibus 2.—*Boott in Fl. N. Zeal.* i. 281; *Boott, Ill. Carex, ined.*

Hab. Grassy pastures, South Esk River, etc.; probably not uncommon.

Distrib. New South Wales, Victoria, and Swan River; New Zealand.

A very slender species, with smooth, filiform culms, 6–9 inches long, and very narrow leaves. *Bracts* 2–4 inches long. *Spikelets* one to three, pale, small.

** *Spikelets with male flowers at top.*

3. **Carex appressa** (Br. Prodr. 242); spica oblonga vel elongata plus minus compacta basi ramosa, e spiculis numerosissimis parvis apice masculis; stigmatibus 2; perigyniis ovatis vel orbiculatis rostratis bifidis, e medio sursum anguste alatis serratis nervatis, squama ovata acuta vel mucronata latioribus longioribusque.—*Fl. Antarct.* i. 91; *Boott, Ill. Carex, t.* 119, 120. (*Gunn*, 574, 769, 985, 1405.)

Hab. Abundant in open forest land, etc.—(Fl. Nov.)

Distrib. New South Wales, Victoria, Swan River, Lord Auckland's Islands.

A stout, rigid, harsh species, with culms 1–5 feet in height, and a spike varying in its length and density, more or less branched, and with many spikelets having the male flowers at top.

4. **Carex chlorantha** (Br. Prodr. 242); spica oblongo-capitata, e spiculis 6–8 pluribusve ovalibus androgynis apice masculis congestis vel inferioribus discretis breve bracteatis composita; stigmatibus 2; perigyniis (floriferis) ovatis rostratis, ore membranaceo antice altius secto marginibus serratis, squama lanceolata cinnamomea margine late albo-hyalina angustioribus brevioribus. (*Gunn*, 579.) (Tab. CL. *B.*)

Hab. Northern parts of the Island, in pastures, etc., and probably common elsewhere, *Gunn, Archer.*—(Fl. Nov.)

Distrib. New South Wales and Victoria.

Culms 6–9 inches high, rigid, with sharp angles, rough. *Leaves* ½–1 line broad, shorter than the culm. *Spike* capitate, of six or eight crowded spikelets, 8–10 lines long, and 3–4 broad.—Plate CL. *B.* Fig. 1, male scale and flower; 2, female ditto; 3, perigynium:—*all magnified.*

§ c. *Spikes several, simple, unisexual.*

* *Stigmas* 2.

5. **Carex Gaudichaudiana** (Kunth, En. ii. 417); spicis 3–6 ovatis oblongis vel cylindraceis erectis, mascula purpurea pedunculata sæpe altera breviore sessili ad basin sita, fœmineis 2–4 evaginatis glaucescentibus purpureo pictis, superioribus vel omnibus apice masculis contiguis sessilibus vel infima remota pedunculata quandoque basi attenuato-laxiflora; stigmatibus 2; perigyniis ovatis vel elliptico-lanceolatis compressis rostellatis, ore integro sæpius emarginato rarissime bifurcato valide nervatis glauco-viridibus

demum ferrugineo-punctatis, squama oblonga vel lanceolata subacuta mutica rarius mucronata purpurea margine albida nervo pallido latioribus longioribusque.—C. cæspitosa, *Br. Prodr.!* 243. (*Gunn*, 416, 959, 1407, 1410.) (TAB. CLI. *A.*)

HAB. Lowland and mountain localities: abundant; Lake St. Clair and Marlborough, South Esk.—(Fl. Dec.) (*v. v.*)

DISTRIB. New South Wales.

Variat altitudine culmi, 2–24 poll.; spicis abbreviatis, ovatis vel elongatis, 3 lin.–2½ poll. longis, 2–4 lin. latis; perigyniis ovatis, latioribus, vel lanceolatis, angustioribus, $1\frac{5}{10}$–$2\frac{4}{10}$ lin. longis, $\frac{7}{10}$–$1\frac{1}{10}$ lin. latis; ore sæpius emarginato (in unam specimine e Tasmania bifurcato); squamis obtusis, muticis, rarius nervo excurrente mucronatis. *Stigmata* 2, vel in speciminibus (Hunter's River, *Wilkes*) stigmata 2 et 3.—Ad *C. vulgarem*, Fries, accedens. Differt perigyniis crebre valide plurinerviis demum ferrugineo-maculatis, squamis subinde mucronatis.—PLATE CLI. *A.* Fig. 1, male scale and flower; 2, female ditto; 3, perigynium:—*all magnified.*

** *Stigmas* 3.

6. **Carex barbata** (Boott, Illust. Carex, t. 187); spicis 4–5 ovalibus vel oblongis gracilibus fusco-purpureis erectis contiguis, terminali mascula sessili, reliquis fœmineis, superioribus sessilibus evaginatis, infima subremota inserte vel subexserte pedunculata; bractea infima culmum longe superante; stigmatibus 3; perigyniis ellipticis acute triquetris emarginato-bidentatis superne vel ore marginibusque scabris punctis resinosis ferrugineis notatis pallide castaneis leviter nervatis, squama ovata acuta mucronata vel obtusa mutica apice ciliata purpurea medio pallida carina scabra duplo longioribus. (*Gunn*, 1407, 1415.)

HAB. Woolnorth; Derwent River, New Norfolk, *Gunn.*—(Fl. Nov.)

Culmus subpedalis. *Folia* 1–1½ lin. lata, culmo breviora, plana. *Spicæ* 4–9 lin. longæ, 1–2 lin. latæ. *Perigynium* $1\frac{4}{10}$ lin. longum, ½ lin. latum.

7. **Carex Gunniana** (Boott, Linn. Trans. xx. 143; Illust. Carex, t. 185); spicis 4–5 oblongis vel cylindraceis erectis, terminali mascula clavata sessili straminea, reliquis fœmineis pallide flavescenti-viridibus, superioribus 1–2 sessilibus masculæ arcte contiguis, inferioribus exserte pedunculatis, infima remota sæpe nutante; bracteis superioribus culmo longioribus; stigmatibus 3; perigyniis elliptico-ovatis trigonis sensim acuminato-rostratis bidentatis ventricosis nervatis superne ad margines scabris flavescenti-viridibus demum punctis nigrescentibus maculatis, squama late ovata acuta vel obtusa plus minus hispido-cuspidata ferruginea longioribus. (*Gunn*, 578.)

HAB. Tasmania, *Gunn*; Cheshunt, *Archer.*

DISTRIB. Victoria, *Mueller.*

Culmus 1–2-ped., lævis. *Folia* 2–4 lin. lata, culmo longiora, plana. *Spica* mascula 5–15 lin. longa, 1–2 lin. lata, sæpius obliqua; fœmineæ 5–18 lin. longæ, 3–4 lin. latæ. *Perigynium* 2–$2\frac{8}{10}$ lin. longum, 1 lin. latum.

8. **Carex littorea** (Lab. Nov. Holl. ii. t. 219); spicis 3–6 oblongis vel cylindricis ferrugineo-purpureis, masculis 1–4 gracilibus, fœmineis crassis longe bracteatis, infima brevi exserte pedunculata; stigmatibus 3; perigyniis turgide ovatis late rostellatis subbifurcatis basi contractis leviter nervatis glabris crasse spongiosis rubro-ferrugineis, squama ovata acuta vel cuspidata purpurea margine albo-hyalina duplo longioribus.—*Br. Prodr.* 243; *Boott in Fl. N. Zeal.* i. 284. C. Urvillei, *Brong.!*; *Kunth, En.* ii. 517. (*Gunn*, 978.)

HAB. Sandy shores of the Island; common.—(Fl. Dec.) (*v. v.*)

DISTRIB. New South Wales, Victoria, New Zealand, Japan?

This is probably the *C. pumila*, Th., of Japan. The rhizome creeps extensively in the sand, and the leaves and long bracts are rigid, with long, attenuated, curved extremities.

9. **Carex cataractæ** (Br. Prodr. 242); spicis 4–6 parvis densifloris congestis, terminali mascula vel apice mascula sessili, reliquis fœmineis flavis subrotundis longe bracteatis, infima sæpe remota brevi exserte pedunculata; stigmatibus 3; perigyniis ovalibus turgidis recte rostratis bidentatis, ore pallido membranaceo facile rupto, nervosis glabris vel rostro apice dentato divergentibus inferioribus recurvatis, squama ovata obtusa fulva margine albo-hyalina nervo viridi longioribus. (*Gunn*, 1411.) (TAB. CLI. *B.*)

HAB. Alpine marshes: Arthur's Lakes, Marlborough, Lake St. Clair, etc., *Gunn*, *Archer*.—(Fl. Jan.)

The culms are often only 2 or 3, or from 6–12 inches high. The generally compact yellow spiculæ are furnished with long bracts, and the upper ones occasionally have male flowers at top. It is scarcely distinguishable from *C. flava*, L., a very variable species.—PLATE CLI. *B.* Fig. 1, scale and male flower; 2, ditto and female flower; 3, perigynium:—*all magnified.*

10. **Carex fascicularis** (Soland. MSS.); spicis 5 cylindricis pedunculatis, terminali omnino vel rarius basi mascula, reliquis fœmineis sæpe apice sterilibus nutantibus vel demum pendulis evaginatis vel infima remota longe exserte pedunculata; bracteis inferioribus longissimis; stigmatibus 3; perigyniis ovatis longe stipitatis cylindrico-rostratis obtuse trigonis bicuspidatis nervosis divergentibus demum recurvatis, squama lanceolata hispido-aristata castanea medio pallida scabra longioribus (arista) brevioribus.—*Boott in Fl. N. Zeal.* i. 283; *Boott, Ill. Carex, t.* 139, 140. C. Pseudocyperus, *Br. Prodr.* 243. (*Gunn*, 332.)

HAB. Common in marshy situations.—(Fl. Dec.) (*v. v.*)

DISTRIB. New South Wales, Victoria, Swan River, New Zealand.

This forms large tufts of long, pale-green, grassy foliage, like the European *C. Pseudocyperus*, which it closely resembles. The culms are 2–3 feet high, with four or five spikes, which, when pendulous, have the perigynia recurved. The lower bracts are very long.

11. **Carex breviculmis** (Br. Prodr. 242); spicis 3–5 parvis oblongis contiguis sessilibus albo-viridibus, terminali mascula, reliquis fœmineis sæpe apice masculis bracteatis; stigmatibus 3; perigyniis ellipticis triquetris utrinque subattenuatis emarginatis nervosis viridibus pubescentibus, squama alba nervo viridi ovata longe cuspidata brevioribus.—*Boott in Fl. N. Zeal.* i. 283. *t.* 63.

HAB. Tasmania, *Gunn;* Cheshunt, *Archer.*

DISTRIB. New South Wales, Victoria, New Zealand.

A short, densely tufted, leafy species, with culms 1–3 inches high, the pale-green spikes concealed among the leaves, which are from 2–10 inches long, and 1–2 lines broad. It is distinguished by its pubescent perigynia.

12. **Carex longifolia** (Br. Prodr. 242); spica longissima, e spiculis pluribus cylindricis stramineis, masculis 2–4, infima sæpe subremota exserte pedunculata, fœmineis fasciculatis 2–5-natis remotis longissime exserte pedunculatis pendulis; stigmatibus 3; perigyniis ellipticis utrinque attenuatis plano-triquetris rostratis bifidis nervatis margine serratis, squama obtusissima rotundata vel emarginata mucronata angustioribus longioribusque.—*Boott, Ill. Carex, ined.* (*Gunn*, 333, 1406.)

Var. *β. minor;* spicis 6 singulis brevibus, foliis abbreviatis.—*Boott, Ill. Carex, ined.*

HAB. Derwent River, at New Norfolk, and South Esk River, *Gunn.*—(Fl. Nov.) (*v. v.*)

DISTRIB. New South Wales and Victoria.

A tall species, remarkable for its fascicled spikelets on long pendulous peduncles, the spikelets occasionally only fertile in the middle. The variety is probably only a young seedling state.

13. **Carex Bichenoviana** (Boott, MSS.); spica elongata fusco-purpurea, e spiculis oblongis vel cylindricis numerosis, superioribus congestis sessilibus masculis omnibus simplicibus vel inferioribus apice masculis remotis breve pedunculatis evaginatis basi compositis, infima simplici; bracteis inferioribus culmum

longe superantibus; stigmatibus 3; perigyniis ovatis bicuspidatis glabris, squama lanceolata aristata brevioribus. (*Gunn*, 1415.)

HAB. Woolnorth, *Gunn*.

Too young for a definite character, but a very distinct species.—*Culm* 2 feet high, rigid, smooth; inflorescence a foot long. *Bracts* very long and slender, the lower 2 feet! *Spikelets* cylindrical, of a fine brown-purple colour, evaginate.

Gen. XVI. UNCINIA, *Pers.*

Spicæ terminales, solitariæ, androgynæ. *Squamæ* undique imbricatæ, 1-floræ. *Flores* unisexuales. MASC. superiores. *Perianthium* 0. *Stamina* 3. FŒM. *Perianthium* (perigynium) utriculus compressus, apice contractus, persistens, arista hypogyna exserta hamata. *Stigmata* 2–3, exserta. *Nux* perianthio aucto inclusa.—Herbæ *habitu* Caricis.

A remarkable genus, confined almost wholly to the southern hemisphere, not infrequent in South America, both tropical and temperate. Eleven species are found in New Zealand, and four in Tasmania, whereof two have been detected in the Australian continent. *Uncinia* is very nearly allied to *Carex*, but differs from most species of that genus in the solitary spike, and most conspicuously in the erect bristle, hooked at the apex, which, arising from close to the base of the ovary, projects from the mouth of the perigynium. A similar organ, but not hooked at the top, is found in many species of *Carex*, as Dr. Boott informs me; it is an elongation of the axis, and shows that the so-called perianthium or perigynium is not a floral organ, but a bract, or rather two connate bracts placed right and left to the axis, like the double upper palea of Grasses.—I am indebted to Dr. Boott for the descriptions of the species. (Name from ογκινος, *a small hook.*)

1. **Uncinia tenella** (Br. Prodr. 241); spica parva ovali laxa albo-viridi apice parce mascula plerumque nuda; stigmatibus 3; perigyniis lanceolatis triquetris enerviis glabris viridibus, squama lanceolata acuta alba nervo viridi decidua paulo longioribus. (*Gunn*, 975.) (TAB. CLII. *A.*)

HAB. Moist woods at Hobarton and Black River, etc., *Gunn*; Western Mountains, *Archer*.

DISTRIB. Victoria.

Dense cæspitosa. *Culmus* 3–6-pollicaris, lævis, setaceus. *Folia* setacea, scabra, culmum subæquantia. *Spica* 3–5 lin. longa, $1\frac{1}{2}$ lin. lata, apice inconspicue mascula. *Squamæ* conformes: infima rarius foliacea, spica plus duplo longior. *Perigynium* $1\frac{8}{10}$ lin. longum, $\frac{4}{10}$ lin. latum. *Achenium* conforme, $\frac{9}{10}$ lin. longum, $\frac{4}{10}$ lin. latum, triquetrum, castaneum.

A very soft, delicate species, growing in dense tufts, with setaceous culms and leaves. Mr. Gunn says it grows on stones and dead trees, among Mosses and *Jungermanniæ*, in dark, dry forests, where few other plants thrive.—PLATE CLII. *A.* Fig. 1, male scale and flower; 2, female ditto and perigynium:—*both magnified.*

2. **Uncinia riparia** (Br.); spica elongata filiformi laxiuscula albo-viridi, apice parce mascula; stigmatibus 3; perigyniis anguste lanceolatis subnervosis glaberrimis viridibus, squama lanceolata subacuta carinata viridi $\frac{1}{2}$ longioribus. (TAB. CLII. *B.*)

HAB. Tasmania, *Brown*; Cuming's Head, *Archer*.—(Fl. Dec.)

A very slender species, $1–1\frac{1}{2}$ foot high.—*Leaves* slightly scabrous, narrow, flat, as long as or longer than the culm. *Spike* 2–4 inches long, very slender; *flowers* rather distant. *Scales* lanceolate, narrow, subacute, keeled, green, with pale margins. *Perigynia* very long, narrow-lanceolate, smooth, nerved, considerably longer than the scale.—PLATE CLII. *B.* Fig. 1, male scale and flower; 2, female ditto and perigynium; 3, perigynium:—*all magnified.*

3. **Uncinia nervosa** (Boott, MSS.); spica ovali densa nuda e viridi ferruginea; perigyniis lineari-

lanceolatis, ore integro obliquo, viridibus nervatis glabris, squama lanceolata subacuta ferruginea medio pallida nervosa, superne albo-hyalina angustioribus longioribusque.—*Boott.* (TAB. CLIII. *A.*)

HAB. Tasmania, *Gunn* (mixed with *U. tenella*).

Culmus 4-poll.?, lævis, gracilis. *Folia* filiformia, firma, culmum subæquantia. *Spica* 6 lin. longa, 2 lin. lata, apice subdimidiatim mascula. *Squamæ* conformes: masculæ angustiores. *Perigynium* $2\frac{7}{10}$ lin. longum, $\frac{1}{2}$ lin. latum.—*Boott.*—PLATE CLIII. *A.* Fig. 1, male scale and flower; 2, female ditto; 3, perigynium:—*all magnified.*

4. **Uncinia compacta** (Br. Prodr. 241); spica oblonga ferruginea nuda vel bracteata, apice plus minus mascula basi demum laxiflora; perigyniis oblongo-ellipticis triquetris viridibus, ore albo obliquo, nervatis, squama ovato-lanceolata acuta ferruginea concolori brevioribus vel æquantibus. (*Gunn*, 1408.) (TAB. CLIII. *B.*)

HAB. Summit of Mount Wellington, *Gunn;* Western Mountains, *Archer.*

Culmus 4–12 poll., triqueter, lævis, rigidus. *Folia* $1–1\frac{1}{2}$ lin. lata, culmo breviora, plana, firma. *Spica* 8–15 lin. longa, 3 lin. lata, apice sæpe dimidiatim mascula. *Squamæ* conformes: infima sæpius setaceo-cuspidata, rarius spica longior. *Perigynium* $2\frac{7}{10}$ lin. longum, $\frac{7}{10}$ lin. latum. *Achenium* $1\frac{3}{10}$ lin. longum, $\frac{7}{10}$ lin. latum, inæqualiter triquetrum, castaneum, basi styli incrassata. (*Boott.*)—PLATE CLIII. *B.* Fig. 1, male scale and flower; 2, female ditto; 3, perigynium:—*all magnified.*

NAT. ORD. XVI. GRAMINEÆ.

This extensive and important Natural Order is very scantily represented in Australia, where (including Tasmania) only about 350 species have been found; hence, though one of the largest natural family of Monocotyledons, it here but little exceeds *Cyperaceæ* in numbers, and is very much smaller than *Leguminosæ, Myrtaceæ, Compositæ,* or *Proteaceæ.* Altogether the Grasses form less than one-twentieth of the whole flowering plants of this part of the globe, a very much smaller proportion than they do in any other country of equal area. The Order varies much in relative numbers to other plants in the different quarters of the continent, the Tasmanian proportion rising to one-sixteenth of the flowering plants of that Island. The Swan River proportion is very much smaller, and the tropical greater.

In the determination of the Tasmanian *Gramineæ,* I have received very great assistance from my friend Colonel W. Munro, through whose remarkable knowledge of this difficult and extensive Order of plants, many of my doubts and perplexities have been solved.

Gen. I. TETRARRHENA, *Br.*

Glumæ parvæ, 3-floræ; *floribus* distiche imbricatis, inferioribus neutris 1-paleatis, terminali hermaphrodito. *Palea fl. neutr. inf.* ovato-elliptica, truncata, carinato-concava; *fl. sup.* paleæ fl. hermaph. conformis. *Fl. hermaph.:—Paleæ* 2, naviculares; *inferior* ovato-oblonga apice rotundata emarginata; *superior* minor, 1-nervis. *Squamulæ* 2, glabræ. *Stamina* 4. *Caryopsis* compressa, libera, paleis obtecta.—Folia *plana;* spiculæ *racemosæ v. spicatæ.*

New Holland and Tasmanian Grasses, with slender, simple or branched culms, flat leaves, and spiked or racemose inflorescence.—*Spikelets* of three flowers, imbricated on opposite sides of the rachis. *Glumes* two very small scales. *Two lower flowers* neuter; the lowest with one ovate, concave palea; upper neuter flower with one palea like that of the terminal flower. *Upper flower* hermaphrodite. *Paleæ* two, boat-shaped; lower ovate-oblong, blunt, notched at the apex; upper smaller, one-nerved. *Scales* two, alternate with the paleæ. *Stamens* four. *Ovary* sessile. *Caryopsis* enclosed in the persistent paleæ. (Name from τετρα *four*, and αρρην, *a male;* in allusion to the four stamens.)

1. **Tetrarrhena distichophylla** (Br. Prodr. 210); rigida, scaberula et pilosa, culmis basi ramosis cæspitosis foliosis, foliis distichis brevibus strictis planis concavisve vaginisque sulcatis ore ciliatis, spiculis scabris pilosis laxe imbricatis inferioribus pedicellatis, paleis nervosis, floris infimi hermaphrodito multo breviore.—Ehrharta distichophylla, *Lab. Nov. Holl.* i. 90. *t.* 117. (*Gunn,* 1473.)

HAB. Dry woods, probably common: Hobarton and Penquite, *Gunn.*—(Fl. Nov.)

A very harsh, rigid, tufted Grass, a span to a foot high, variable in size, very rough to the touch, also covered with short, spreading hairs.—*Culms* ascending, of many short branches, and a few long flowering ones, some of them prostrate, and covered with sheaths. *Leaves* more or less closely imbricated, distichous, strict and rigid, flat or concave, deeply grooved; sheaths hairy at the mouth; blade $\frac{1}{2}$–$1\frac{1}{2}$ inch long. *Flowering culm* leafy to the top. *Spike* $\frac{1}{2}$–2 inches long, erect; lower spikelets pedicelled. *Spikelets* scabrid and pubescent, blunt, $\frac{1}{8}$ inch long. *Glumes* and *lower palea* short, broad, blunt.

2. **Tetrarrhena tenacissima** (Nees, in Hook. Lond. Journ. Bot. ii. 409); scabrida, culmis elongatis flexuosis intertextis laxe foliosis ad nodos ramosis, foliis planis, vaginis ore ciliatis, culmis floriferis gracilibus, spiculis glabris, glumis obtusis nervosis, paleis obtusis inferiore cæteris $\frac{1}{2}$ breviore.—T. contexta, *Mueller, MSS.* (*Gunn,* 987.) (TAB. CLIV.)

HAB. Moist places, near the sea, at Black River (north-west coast), *Gunn.*

DISTRIB. Victoria, Cape Otway, south-east coast of Australia.

A very remarkable Grass, climbing over bushes with its flexuous, branching culms, 6–7 feet long.—Whole plant very scabrid. *Culms* deeply furrowed. *Leaves* remote, with long sheaths, hairy at the mouth and blades, 1–$1\frac{1}{2}$ inch long. *Spikes* 1 inch long, of eight to ten distichous, smooth spikelets on a flexuous rachis, terminating the slender upper part of the culm. *Glumes* blunt, nerved; *lower palea* blunt, itself as long as the upper, which are also blunt, and 2 lines long.—PLATE CLIV. Fig. 1, spikelet; 2, hermaphrodite flower; 3, ovary and squamulæ:—*all magnified.*

3. **Tetrarrhena acuminata** (Br. Prodr. 210); culmis decumbentibus, foliis brevibus vaginisque glabris, spica oblonga 4–8, spiculis lanceolatis, palea inferiore nervosa acuminata, superiore breviore truncata.

HAB. Tasmania, *Brown;* Longford, *Archer.*—(Fl. Nov.)

DISTRIB. Victoria.

A slender, much branched species.—*Culms* decumbent, about 6–12 inches high. *Leaves* short, 1–3 inches long, glabrous. *Spike* oblong, of four to eight large, lanceolate spikelets. *Palea* strongly striate; outer acuminate; inner shorter, truncate.

Gen. II. MICROLÆNA, *Br.*

Glumæ minimæ, 3-floræ, floribus remotæ; *floribus* approximatis, stipitatis, stipite barbato, inferioribus neutris 1-paleatis, paleis aristatis, terminali hermaphrodito. *Fl. hermaph.:*—*Paleæ* 2; inferiore carinata, acuminata v. aristata; superiore breviore, lineari, hyalina. *Squamulæ* 2, glabræ. *Stamina* 4. *Ovarium* sessile. *Caryopsis* libera, paleis obtecta.—Culmis *simplicibus v. ramosis;* foliis *parvis v. elongatis, planis;* spiculis *racemosis v. paniculatis.*

A small genus of Australian, Tasmanian, and New Zealand Grasses, closely allied to *Tetrarrhena,* differing from it in the long villous pedicel to the florets, which are thus separated from the small glumes, as also by the narrow awned palea of one or both of the neuter flowers, the linear, hyaline, upper palea of the terminal flower, and the linear, compressed caryopsis; the stamens are four. (Name from μικρος, *small,* and χλαινα, *a covering;* in allusion to the small glumes.)

1. **Microlæna Gunnii** (Hook. fil.); culmis elongatis foliosis vaginis foliisque scaberulis pilosisve, racemo elongato subsimplici, pedicellis breviusculis, glumis minimis acutis stipite florum æquilongis, aristis palearum inæqualibus, paleis scaberulis v. dorso ciliatis inferiore intermedio $\frac{1}{3}$ breviore, floris hermaphroditi inferiore acuminato v. subaristato. (*Gunn*, 1492.) (TAB. CLV. *A.*)

HAB. Penquite, near Launceston, *Gunn*; Cheshunt, *Archer*; Huon River, *Oldfield*.—(Fl. Nov.)

Culms tufted, branched below, 2–3 feet high, leafy. *Sheaths* rough or polished. *Leaves* hairy or scabrous, rarely smooth, their blade 2 inches long. *Panicle* drooping, slender, 6–8 inches long. *Spikelets* sessile or on very short pedicels, $1\frac{1}{2}$ inch long, including the long awns, the lower of which is fully one-third shorter than the other. *Glumes* very small, as long as the stalk of the flower, sharp-pointed. *Palea* deeply furrowed, rough or ciliated at the back; intermediate one acuminate, or with a very short awn.—Very nearly allied to *M. stipoides*, but larger, more rough and hairy, with a shorter pedicel to the flower.—PLATE CLV. *A.* Fig. 1, spikelet; 2, hermaphrodite flower; 3, squamulæ, ovary, and stamens:—*all magnified.*

2. **Microlæna stipoides** (Br. Prodr. 210); glabra v. vaginis foliisque parce pilosis, culmis gracilibus basi ramosis foliosis, panicula gracili nutante, pedicellis inferioribus elongatis, glumis minimis acutis stipite florum brevioribus, aristis palearum subæquilongis, paleis scaberulis subæqualibus v. inferiore $\frac{1}{3}$ breviore, floris hermaphroditi palea inferiore acuta v. breviter aristata.—*Kunth, Agrost. p.* 16; *Fl. N. Zeal.* i. 289. Ehrharta stipoides, *Lab. Fl. Nov. Holl.* i. *p.* 16. *t.* 118. (*Gunn*, 997.)

HAB. Launceston and Flinders' Island, etc., *Gunn*.—(Fl. Nov.)

DISTRIB. South-eastern and South-western Australia, from Port Jackson to Swan River; New Zealand.

A slender Grass, 18 inches to 2 feet high, smooth or slightly hairy on the sheaths and leaves, which are short and flat (2–3 inches long).—*Panicle* branched at the base, long, slender, nodding. *Lower spikelets* on long slender stalks. *Glumes* very minute, deciduous, generally shorter than the bearded pedicel of the flowers. *Flowers* 1 inch long, the two lower of one palea each, their awns of equal length, in the lower $\frac{1}{3}$ shorter than in the upper. *Lower palea* of the upper flower sharp or with a short bristle.

Gen. III. DIPLAX, *Banks et Sol.*

Glumæ minimæ, 3-floræ; *floribus* sessilibus, approximatis, basi nudis; inferioribus neutris, 1-paleatis, paleis acuminatis v. aristatis; supremo hermaphrodito 2-paleato, palea inferiore acuminata, superiore hyalina. *Squamulæ* 2, glabræ. *Stamina* 2–4. *Caryopsis* libera, paleis obtecta.—Culmis *simplicibus v. ramosis*; foliis *elongatis, planis*; panicula *nutante.*

A Tasmanian and New Zealand genus, very nearly allied to *Microlæna*, but differing in the sessile flowers not hairy at the base, and the obscurely awned paleæ of the neuter flowers. (Name in allusion to the two stamens of the first-described New Zealand species.)

1. **Diplax Tasmanica** (Hook. fil.); glaberrima, culmis cæspitosis basi foliosis (foliis planis) superne gracilibus, racemo brevi rarifloro, spiculis longe pedunculatis, gluma superiore obtusa inferiore ter majore paleis $\frac{1}{4}$ breviore, fl. neutr. paleis breviter aristatis, fl. hermaph. palea inferiore subacuta, staminibus 2. (*Gunn*, 1481.) (TAB. CLV. *B.*)

HAB. Recherche Bay, *Gunn*.—(Fl. Dec.)

A perfectly smooth, tufted Grass, a foot high.—*Culms* tufted and leafy below, very slender above. *Leaves* 4 inches long, $\frac{1}{6}$ broad, flat. *Raceme* of six to eight large spikelets ($\frac{2}{3}$ inch long with the awns), on slender, flexuous peduncles. *Glumes* very unequal, blunt, the upper largest, one-fourth as long as the palea above it. *Palea* of the lower neuter flower shorter and with shorter awns than the upper. *Lower palea* of the fertile flower sharp. *Stamens* 2. —PLATE CLV. *B.* Fig. 1, spikelet; 2, hermaphrodite flowers; 3, squamulæ, ovary, and stamens:—*all magnified.*

Gen. IV. SPINIFEX, *L.*

Flores polygamo-dioici; *spiculis* bifloris; *masculis* solitariis, ad basin racheos elongatæ aristæformis; *androgynis* in distincta planta spicatis. *Glumæ* 2, membranaceæ. *Spiculæ androg.:—Flos inferior* ♂ v. neuter. *Paleæ* 2 v. 1, membranaceæ. *Flos superior* ⚥. *Paleæ* 2, coriaceæ, inferior superiorem binervem amplectens. *Squamulæ* 2, carnosæ. *Styli* basi subcohærentes. *Caryopsis* intra paleas libera.—Gramina *ramosissima suffrutescentia, in arenosis repentia;* spicis masculis *umbellatim congestis, in acumen pungens productis;* fœmineis *fasciculatis, fasciculis in capitulum congestis.*

A very remarkable and conspicuous genus of downy or silky Grasses, forming creeping, bushy tufts in sea-sand, much branched. *Spikes* collected into globose bunches; *male spikes* solitary, placed at the base of a long, naked, subulate rachis; *hermaphrodite (androgynous) spikes* usually on separate plants. *Spikelets* two-flowered. *Glumes* two, membranous, nearly equal. *Paleæ* of the male spikes two, membranous; lower oblong, channelled; upper with two ciliated keels. *Androgynous spikelets* spiked, two-flowered; lower flower male or neuter, with two (rarely one) membranous palea; upper flower hermaphrodite, with two coriaceous, oblong, concave paleæ, the lower including the upper, which is two-nerved. *Scales* two, fleshy. *Caryopsis* enclosed between the paleæ, free. (Name from *spina*, in allusion to the spinous rachis of the male spikelets.)

1. **Spinifex hirsutus** (Lab. Fl. Nov. Holl. ii. p. 81. t. 230, 231); vaginis sericeo-tomentosis v. inferioribus glabratis, foliis intus glabris inermibus, rachi spicæ masculæ spicam superante.—*Br. Prodr.* 198; *Fl. N. Zeal.* i. 292. (*Gunn,* 584.)

Hab. Sandy shores on both the north and south coasts.—(*v. v.*)

Distrib. Extratropical Australia; New Zealand.

A very strong-growing, silky and woolly Grass, with creeping, knotted, stout, rooting culms, branched here and there; the branches bearing long, involute, flexuose leaves, 1–1½ foot long.—*Lower sheaths* smooth and shining, upper, as well as the back of the leaf, covered with shaggy or silky tomentum or hairs. *Male spikes* numerous, peduncled, silky, 1 inch long, collected into an involucrate head, the rachis produced beyond the flowers. *Hermaphrodite (androgynous) spikes* also numerous, and collected into an involucrate head, formed of numerous silky spines, 4–5 inches long, that stick out in all directions; each of these is a peduncle or rachis, at whose base only the fertile flowers are to be found.

Gen. V. ANTHISTIRIA, *L.*

Spiculæ 1–2-floræ, fasciculatæ (fasciculis paniculatis bracteatis); 4 inferiores 1–2-glumæ, neutræ v. masculæ, circa 3 superiores fasciculatæ; superiorum 2 *laterales* biglumæ, pedicellatæ, masculæ; *intermedia* (fasciculo centralis) sessilis, hermaphrodita. *Gluma* inferior superiorem amplectens. *Paleæ* hyalinæ, membranaceæ; flosculis hermaphroditis 2; neutris masculisque plerumque 1; inferiore flosculi hermaphroditi aristato. *Squamulæ* 2. *Stamina* 3.—Gramina *plerumque elata, planifolia.*

A very curious genus, whose structure is not easily understood by the student, but this species may easily be recognized by its peculiar habit, spathaceous spikelets, and long, stout awns. The Tasmanian species (Kangaroo Grass) is particularly valuable as affording a good and abundant fodder Grass in the dry seasons.—*Spikelets* panicled, about seven together, one- or two-flowered, collected into bundles, and each bundle furnished with a large awned bract or spathe. *Four outer spikelets* in each bract sessile, whorled round three central ones, which are placed on a bearded pedicel, of one or two awnless or short-awned glumes, each containing one neuter or male flower that has only one palea. Of the three central flowers, the two lateral are stalked, awnless, or with short-awned glumes, male, and contain a unipaleate flower; the middle spikelet is sessile, and has coriaceous, blunt glumes, and uni- or bi-paleate, hermaphrodite flowers. *Paleæ* membranous, the outer one of the hermaphrodite flower with a long, strong, bent awn. *Stamens* 3. (Name, the Greek one for a species of Grass.)

1. **Anthistiria australis** (Br. Prodr. p. 200); culmis teretibus vaginisque glaberrimis, foliis glabris scaberulisve, glumis spathisque imberbibus.—*An var.* A. ciliatæ? (*Gunn*, 591.) (Tab. CLVI.)

Hab. Abundant throughout the Island.—(Fl. Oct.–Dec.) (*v. v.*) Colonial name, "Kangaroo Grass."

Distrib. Throughout Australia (India, Abyssinia, and South Africa?).

A tall, glabrous, smooth Grass, 1–3 feet high.—*Culms* leafy. *Leaves* smooth or scabrid. *Ligula* membranous. *Spathes* 2 inches long, with long, straight points. *Glumes* of outer spikelets acuminate, ½ inch long. *Pedicel* of central spikelets with a whorl of brown hairs at the top; two lateral male spikelets with subulate, almost awned glumes. *Outer glume* of central spikelet with a rigid, brown, flexuose, bent, strong awn, 1½–2 inches long.—This appears probably to be a glabrous state of the widely-diffused *A. ciliata*.—Plate CLVI. Fig. 1, fascicle of spikelets in bract; 2, lower spikelet; 3, lateral of the three central spikelets; 4, central hermaphrodite spikelet; 5, hermaphrodite flower; 6, squamulæ, stamens, and ovary:—*all magnified.*

Gen. VI. HEMARTHRIA, *Br.*

Spica compressa, semiarticulata. *Spiculæ* quovis articulo utræque fertiles, binatæ; altera (inferior) sessilis, per glumam superiorem rachi agglutinata; altera (superior) pedicellata, pedicello cum rachi arcte connato, glumis liberis. *Flores* hyalini, mutici; inferior unipaleaceus, neuter; superior bipaleaceus, hermaphroditus. *Squamulæ* 2, truncatæ, glabræ.—Gramina *ramosa;* foliis *planis;* ramulis *monostachyis, subfasciculatis v. simplicibus.*

A very curious genus of Grasses, natives of Southern Europe, Australia, India, South Africa, and North America, belonging to a section of the Natural Order that has usually a jointed rachis to the spike, which is however hardly the case in *Hemarthria*.—*Inflorescence* spiked. *Spikelets* two together, the lower sessile, the upper apparently so also, but seated on a flat pedicel, which is attached throughout its whole length to the rachis of the spike. *Glumes* two, the inner (upper) one of the lower spikelet attached by its back to the rachis of the spike; glumes of the upper spikelet both free. *Flowers* included, two in each pair of glumes; the lower of one palea, neuter; upper of two paleæ, hermaphrodite. *Scales* two, truncate. *Stamens* 3. (Name from ἡμι, *half*, and αρθρος, *a joint;* in allusion to the structure of the spike.)

1. **Hemarthria uncinata** (Br. Prodr. p. 207); rigida, culmis strictis foliosis subcompressis glaberrimis, foliis subbifariis patulis brevibus basi vaginisque parce ciliatis, spica angusta elongata erecta, gluma superiore apice hamata. (*Gunn*, 417.)

Hab. Coasts of the northern parts of the Island, *Gunn*.—(Fl. Dec.)

Distrib. Australia.

This is, I believe, a littoral Grass, forming dense tufts.—*Culms* creeping, very hard and tough, leafy below 3 inches to a foot high, quite smooth and glabrous, compressed, often curving. *Leaves* distichous, coriaceous, smooth except at the base, where the margins, as also of the sheaths, are ciliated; blade 1–6 inches long. *Spike* 1½–4 inches long, narrow, slender. *Spikelets* closely pressed to the rachis, hardly imbricated, green or purplish, ⅕ inch long. *Outer glumes* flattish, nerved, acuminate, cuspidate; inner keeled, with an acuminate point, terminating in a sharply reflexed point. *Paleæ* membranous.

Gen. VII. HIEROCHLOE, *Gmel.*

Spiculæ 3-floræ; *floribus* lateralibus masculis, intermedio hermaphrodito. *Glumæ* 2, carinatæ, subæquales. *Paleæ* 2, muticæ v. inferior aristata, carinata; *arista* terminali v. dorsali, recta v. incurva, brevi. *Squamulæ* 2, bilobæ. Fl. ♂. *Stamina* 3. Fl. ☿. *Stamina* 2. *Caryopsis* libera, paleis obtecta.—Gramina *odora;* foliis *planis v. involutis;* spiculis *paniculatis, nitidis, majusculis.*

A very beautiful genus of sweet-smelling Grasses, found principally in the cold climates of both hemispheres, and on the lofty mountains of warmer ones. One southern species is common to Tasmania, New Zealand, and Fuegia; another to Europe, New Zealand, and Tasmania.—*Leaves* soft, flat or involute. *Culms* tufted. *Panicles* loose or compact, of many large, pedicelled, shining, often pale-yellow spikelets. *Glumes* equal, keeled, with three almost sessile flowers, the two lower male, with three stamens, the middle or upper hermaphrodite, with two stamens. *Paleæ* broad, blunt, often downy; lower keeled, with a short, straight or bent, terminal or dorsal awn; upper two-nerved; middle flower with shorter awns or none. *Scales* two, two-lobed. *Seed* free within the paleæ. (Name from ἱερος, *sacred*, and χλοη, *a Grass*; the *H. borealis* being dedicated to the Virgin Mary.)

1. **Hierochloe redolens** (Br. Prodr. 209, in note); foliis planis scaberulis glabrisve, ligulis late ovatis obtusis, panicula effusa nutante, glumis flores æquantibus superiore nervis lateralibus ad medium attingentibus, fl. masc. palea inferiore 5-nervi pubescente basi subvillosa infra apicem aristata marginibus dorsoque ciliatis, fl. hermaph. obtuso mucronato v. subaristato.—*Nob. in Fl. Antarct.* i. *p.* 92, *et Fl. N. Zeal. t.* 300. H. antarctica, *Br. l. c.* Jervesia redolens, *Rœm. et Schult.* Disarrenum antarcticum, *Lab. Fl. Nov. Holl.* ii. *p.* 83. *t.* 232. (*Gunn,* 337.)

HAB. Common in wet places throughout the Island.—(Fl. Nov.) (*v. v.*)

DISTRIB. New Zealand, and the islands to the south of it; Fuegia.

A large and handsome Grass, conspicuous for its delicious odour, like that of the common vernal Grass (*Anthoxanthum*) of England, that gives the sweet scent to new-made hay.—*Culms* leafy, densely tufted, 2–3 feet long, herbaceous. *Leaves* flat, smooth or minutely scabrid to the touch; ligulæ membranous, broad. *Panicle* nodding, 6–10 inches long, of many shining, pale spikelets; branches capillary, hairy here and there; lower 2–3 inches long. *Glumes* shining, about $\frac{1}{4}$ inch long, as long as the flowers; outer with sometimes two lateral, very short nerves at the base; upper three-nerved to the middle. *Lower palea* of the lateral flowers bearded below, downy above, the margins and back with long cilia, five-nerved; *awn* short, inserted below the top. *Lower palea* of the upper flower smooth or downy above, with a short awn.—For observations on the varieties of this Grass, see 'Flora Antarctica.'

2. **Hierochloe borealis** (Rœm. et Schultes); cæspitosa, glaberrima, foliis culmo gracili brevioribus, panicula brevi ovata pauciflora, glumis coloratis 3-nerviis floribus subæquilongis, palea inferiore sericea mutica v. aristata.—*Engl. Bot. t.* 1641; *Nob. Fl. N. Zeal.* i. 300. H. Frazeri, *Mihi in Fl. Antarct., note, p.* 93. (*Gunn,* 337.)

HAB. Top of Mount Wellington and other mountains, *Frazer, Gunn, Archer.*—(Fl. Jan.)

DISTRIB. New Zealand, Arctic and Alpine Europe, Asia, and North America, as far south as Mexico.

A very distinct-looking Grass, much smaller than *H. redolens*, with shorter, more strict leaves, and a small, ovate panicle of fewer, smaller flowers.—*Culms* a foot high, tufted. *Leaves* 4–8 inches long, strict, quite smooth, flat. *Panicle* 2–3 inches long, ovate. *Spikelets* $\frac{1}{5}$ inch long, broad. *Glumes* short, acute, as long as the flowers, three-nerved, the lateral nerves shorter, sometimes obscure. *Flowers* silky; outer palea with ciliated margins, and an awn which is very variable in length, inserted above or below the middle.—I had named this Grass *H. Frazeri* in the 'Flora Antarctica,' from Tasmanian specimens gathered by Mr. Frazer on Mount Wellington, but I quite agree with Colonel Munro in considering it identical with the *H. borealis*, a very common plant in the Arctic regions, and in the mountains of Northern Asia, Middle and Southern Europe, and North America. It varies greatly in the position and length of the awn, and size of the panicle.

3. **Hierochloe rariflora** (Nob. in Fl. Antarct. i. 93, in note); culmis gracilibus elongatis nodosis ramosis, foliis scaberulis strictis angustis subsetaceis flexuosisve, panicula ovata pauciflora, ramis flexuosis, glumis inæqualibus subacutis floribus brevioribus, flosculis muticis obtusis, palea inferiore glabrata marginibus ciliatis pubescentibusve. (*Gunn,* 1467.) (TAB. CLVII. *A.*)

HAB. Northern part of Tasmania, *Gunn.*—(Fl. Dec.)

DISTRIB. King George's Sound and Victoria.

A very distinct species, conspicuous for its slender, branched, leafy, knotted culms, 2–3 feet long, its narrow, strict, rigid leaves, rough to the touch, and small, loose panicle of small spikelets, on long, flexuous branches.—*Glumes* rather blunt, unequal, shorter than the flowers, which are nearly smooth, except at the margins, and have no awns.—PLATE CLVII. *A.* Fig. 1, spikelet; 2, male flower; 3, hermaphrodite flower; 4, squamulæ, stamens, and ovary:—*all magnified.*

Gen. VIII. ALOPECURUS, *L.*

Glumæ 2, naviculares, subæquales, basi connatæ, 1-floræ. *Paleæ* 1–2, marginibus connatis v. liberis; inferior carinata, dorso sæpius aristata; superior brevior, 1-nervis, v. 0. *Squamulæ* 0. *Stamina* 3. *Caryopsis* elliptica, compressa, inter glumas induratas paleasque libera.—Culmis *sæpius simplicibus;* foliis *planis;* panicula *conferta, spicæformi, cylindrica, densiflora.*

A genus almost wholly confined to the temperate and frigid regions of the northern hemisphere; but one species is common to the Arctic and Antarctic regions (Fuegia), and the Tasmanian one is found also in New Zealand and in Europe.—*Culms* generally simple, with flat leaves. *Panicles* contracted into dense, pale, cylindrical spikes. *Spikelets* one-flowered. *Glumes* laterally flattened, boat-shaped, keeled, joined together below. *Paleæ* one or two, free or connate; lower keeled, often awned at the back; upper, when present, smaller, one-nerved. *Stamens* three. *Caryopsis* compressed, free, included in the hardened glumes and paleæ. (Name from αλωπηξ, *a fox*, and ουρος, *a tail.*)

1. **Alopecurus geniculatus** (Linn.); culmis cæspitosis basi geniculatis, panicula contracta cylindracea, glumis pubescentibus, palea dorso infra medium aristata.—*Engl. Bot. t.* 1250. A. australis, *Nees, in Mitchell's Australia, n.* 51.

HAB. In a rivulet, Formosa, *Gunn.* (Common Foxtail Grass of England.)—(Fl. October.)

DISTRIB. New South Wales and Victoria, New Zealand, Eastern, Central, and Northern Asia, North America, Europe.

The *culms* and *leaves* quite smooth, the former 1½–2½ feet high, ascending, bent below. *Panicle* a soft, downy, cylindrical, green spike, 1½–2½ inches long. *Spikelets* imbricated on a woolly rachis. *Glumes* downy and fringed. *Palea* with an awn of variable length inserted at or below the middle, sometimes at the base.

Gen. IX. STIPA, *L.*

Spiculæ 1-floræ, flore stipitato. *Glumæ* 2, membranaceæ, florem superantes. *Paleæ* 2, coriaceæ, cylindraceo-involutæ; inferior aristata; arista simplici torta, basi cum palea articulata; superior brevior, coriacea, 2-nervis. *Squamulæ* 3, carnosæ, ovarii stipiti adnatæ. *Antheræ* apice plerumque barbatæ. *Caryopsis* paleis arcte involuta.—Foliis *planis v. convolutis;* spiculis *paniculatis, pedicellatis.*

A large genus, of generally handsome, rigid, wiry, shining Grasses, conspicuous for their very long awns abundant in the temperate and warmer regions of the globe; rarer in the tropics or cold zones; differing from *Dichelachne* chiefly in the long glumes and coriaceous upper paleæ, the lower of which is entire at the tip, and the awn being jointed on to its summit.—*Leaves* involute, often setaceous, smooth, downy, or ciliated in the true species. *Glumes* two, equal, longer than the floret, generally transparent, shining, much acuminate. *Floret* solitary, stipitate, downy, villous below. *Paleæ* coriaceous, margins involute; lower with a terminal, twisted awn; upper shorter, two-nerved. *Anther-cells* often bearded. *Squamulæ* three, attached to the stalk of the ovarium. *Seed* enclosed in the involute paleæ. (Name from στυπη, *tow;* in allusion to the feathery awns.)

1. **Stipa semibarbata** (Br. Prodr. 174); culmis basi nodis vaginisque sericeis pubescentibusve, ligula ciliata, foliis infimis setaceis scabris pilosis glabratisve caulinis sæpius latioribus glabratis, panicula subcontracta, glumis flore ½ v. bis longioribus, palea inferiore sericea, arista longissima e basi ad v. ultra medium plumosa.—*Kunth, En.* i. 183. (*Gunn,* 1480, 1452.)

Hab. Abundant in dry soil throughout the Island.—(Fl. Nov.) (*v. v.*)

Distrib. Extratropical Australia.

A common, tall, harsh Grass, 2–3 feet high.—*Culms* stout, silky or downy below, as are the sheaths and knots, often quite smooth above; ligula with a tuft of silky or woolly hairs. *Lower leaves* a span long, narrow, involute, rigid, rough or covered with spreading hairs, sometimes quite smooth; *upper* often broader. *Panicle* contracted, a span long and upwards. *Glumes* colourless or purplish, rough to the touch but not to the eye, about ¾ inch long, twice as long as the silky palea. *Awns* 3 inches long, densely covered with silky hairs from the base to about or above the middle.—A variable Grass, like its congeners, in hairiness and pubescence of the leaves, sheaths, and culms. The feathered awn always distinguishes it from all except perhaps *S. mollis*, Br., of Port Jackson, which I cannot distinguish from this otherwise. Sieber's specimen of *S. mollis* (Agristotheca, t. 60) is the same as Brown's *S. semibarbata*. A very similar plant, but with shorter awns, inhabits the Swan River Colony.

2. **Stipa pubescens** (Br. Prodr. 174); glaberrima, v. culmis basi nodis vaginisque pubescentibus, foliis infimis setaceis patentim pilosis scaberulis glabrisve, ligulis nudis villosisve, panicula contracta, glumis flore ½ v. bis longioribus, palea inferiore sericea, arista longissima nuda v. infra medium pubescente.—*Kunth, En.* i. 183. S. pubinodis, *Trin. et Rupr. Stip.* 50. (*Gunn,* 588, 996, 1453.)

Hab. Common in dry soils.—(Fl. Nov.) (*v. v.*)

Distrib. Extratropical Australia.

Very similar in habit and general appearance to *S. semibarbata*, differing chiefly in the awn not being feathery. The glumes vary a good deal in size, as do the awns, from 2½–3½ inches long. In old specimens the glumes become truncate and erose at the apex.

3. **Stipa flavescens** (Lab. Fl. Nov. Holl. i. p. 24. t. 30); glaberrima, v. culmis ad nodos subsericeis, foliis strictis involutis, ligula truncata brevissima nuda v. ciliata, panicula rara contracta erecta, glumis flore paulo longioribus, palea inferiore sericea, arista breviuscula nuda glaberrima v. puberula.—*Br. Prodr.* 175. *Kunth, En.* i. 183. S. læviculmus, *Nees, Plant. Preiss.* ii. 99. (*Gunn,* 996, *in part.*)

Hab. Tasmania, probably common, *Gunn, etc.*—(Fl. Dec.)

Distrib. Southern and temperate Australia.

A tall slender species, 3 feet high, of which Mr. Gunn has sent copious specimens, but of the flowering culms only, without root and lower leaves, and with no precise habitat attached.—*Culms* above and upper leaves perfectly smooth, as are the sheaths and involute blades; ligula very short, quite glabrous, or ciliated. *Panicle* narrow, erect, fewer-flowered than in *S. flavescens*, a span long. *Glumes* acuminate, not much longer than the flower. *Awn* quite smooth, or downy, 2 inches long.

4. **Stipa setacea** (Br. Prodr. 174); gracilis, foliis setaceis, vaginis brevibus membranaceis sericeis vaginis nodisque glabris pubescentibusve, panicula stricta rariflora effusa, ramis primariis brevibus subverticillatis flexuosis, arista geniculata elongata nuda.—*Kunth, En.* i. 183. (*Gunn,* 1487.) (Tab. CLVII. *B.*)

Hab. Tasmania, *Brown;* Launceston, *Gunn.*

Distrib. Extratropical Australia.

A very pretty, slender species.—*Leaves* short, 3–5 inches, setaceous, smooth, glabrous or more or less downy, with a silky, short, membranous ligula (I do not find the ligula to be elongated as described by Brown). *Culms* slender, about 18 inches high. *Panicle* a span long, erect, few-flowered. *Primary branches* capillary, flexuose,

very short, spreading, whorled or fascicled, one- to three-flowered. *Glumes* purple, ½ inch long, one-half longer than the flower. *Palea* silky. *Awn* 3 inches long, very slender, glabrous or faintly downy.—PLATE CLVII. *B.* Fig. 1, spikelet; 2, flower; 3, ovary, squamulæ, and stamens:—*all magnified.*

[NOTE.—*S. elegantissima* (Lab. Fl. Nov. Holl. i. p. 23. t. 29) is stated by Mr. Brown (Prodr. p. 175), on the authority of the late Mr. Lambert's herbarium, to be a native of Tasmania. It is a native of S. W. Australia and Swan River, and may be recognized at once by the long, beautifully ciliated, capillary branches of the wide-spreading panicle.]

Gen. X. DICHELACHNE, *Endl.*

Spiculæ 1-floræ; floris stipite brevi barbato. *Glumæ* 2, membranaceæ, acuminatæ, florem æquantes v. superantes. *Paleæ* 2, inferior scabra v. sericeo-pilosa, bifida, inter lobos aristata; arista simplici, subtorta, basi inarticulata; superior brevior, linearis, 2-dentata. *Squamulæ* 3, subfalcatæ; interior conformis, tenerior.—Folia *convoluta;* panicula *coarctata.*

Rigid, wiry Grasses, with subulate or convolute leaves, and narrow, rather dense panicles of shining flowers; natives of Australia, Norfolk Island, and New Zealand.—*Glumes* two, membranous, sharp, as long as or longer than the solitary flower, which has a short bearded stalk. *Paleæ* two, lower membranous or coriaceous, scabrid or silky, bifid, with a twisted awn from between the lobes, which is not jointed on to the palea; *upper* shorter, linear, two-toothed at the tip. *Scales* three, curved. *Seed* very narrow. (Name from διχηλος, *cloven-footed,* and αχνη, *chaff;* in allusion to the bifid paleæ.)

1. **Dichelachne crinita** (Nob. in Fl. Nov. Zeal. i. 293), glaberrima scaberula v. molliter pubescens, foliis planis involutisve, panicula elongata coarctata spiculis densissimis rarius lobata v. rariflora aristis flexuosis quasi crinita, glumis angustis longe acuminatis flore breviter stipitato excedentibus, palea inferiore scaberula acuminata apice integra v. bifida, arista dorsali supra medium inserta longissima flexuosa haud tortili, palea superiore breviore apice bidentato.—D. vulgaris, D. Forsteriana, D. Hookeriana *et* D. longiseta, *Trin. et Rupr. Act. Soc. Petrop. ser.* vi. *vol.* v. *p.* 3. Muhlenbergia mollicoma, *Nees, in Hook. Lond. Journ. Bot.* ii. 414. M. crinita, *Trin. Diss. Gram. Uniflor.* 192; *Nees, in Hook. Lond. Journ. Bot.* ii. 414. Agrostis crinita, *Br. Prodr.* 170. Anthoxanthum crinitum, *Linn. Suppl.* 90; *Forst. Prodr. n.* 18; *Lab. Fl. N. Holl.* ii. *p.* 115. *t.* 263. Cinna crinita, *Trin. Fund.* 118. (*Gunn,* 589, 988, 1478.)

HAB. Throughout the Island, abundant.—(Fl. Aug.–Dec.) (*v. v.*)

DISTRIB. Extratropical Australia and New Zealand.

A very abundant and variable Grass, quite smooth, or with the lower leaves and sheaths covered with soft down. *Culms* annual, tufted, 1–3 feet high, stout or slender, leafy at the base and sometimes up to the inflorescence. *Panicle* 4–8 inches long, pale yellow-green, shining, contracted, dense and spike-like, rarely thin, with the branches conspicuous and few-flowered; always covered with the long flexuous awns. *Glumes* very long, slender, acuminate, scabrid at the keel, longer than the flowers by one-half or one-third. *Lower palea* long, scabrous, hard, with a contracted narrow entire or bifid point, and a dorsal awn, which is flexuous and not twisted, inserted above the middle. *Upper palea* shorter, narrow, membranous, bifid at the top.—This curious plant differs from *Dichelachne* in the awn not being twisted, from *Agrostis* in the pedicelled flower, from *Muhlenbergia* in the long glumes. I have followed Trinius and Ruprecht by placing it in the first-named genus, but have retained the original specific name of *crinita,* which is most appropriate and familiar, and used by Brown, Labillardière, Forster, and Linnæus. MM. Trinius and Ruprecht, on the other hand, substitute that of *vulgaris* for the Australian specimens, and *Forsteriana* for the New Zealand ones.

2. **Dichelachne sciurea** (Hook. fil. Fl. N. Zeal. 294); lævis, v. culmis basi vaginis foliisque scaberulis, foliis planis v. involutis, panicula elongata laxa rariflora, glumis inæqualibus acuminatis florem

vix superantibus, palea inferiore scaberula arista tortili 4-plo longiore.—D. Sieberiana, *Trin. et Rupr. l. c.* Agrostis sciurea, *Br. Prodr.* 171. *Kunth, En.* i. 218. Muhlenbergia? sciurea, *Trin. Gram. Unifl.* 193. M. rara, *Nees, in Hook. Lond. Journ. Bot.* ii. 414. (*Gunn,* 989.) (Tab. CLVIII. *A.*)

Var. β; foliis velutinis.

Hab. Abundant throughout the Island. β. Hobarton, *Oldfield.*

Distrib. New South Wales, Victoria, New Zealand, and Norfolk Island.

A more slender plant than *D. crinita,* but very closely allied to it, differing in the thin panicle, which is loosely branched, and comparatively very few-flowered. The glumes are shorter than in *D. crinita,* as long as the flower, and the twisted awn is not four times longer than the upper palea.—Plate CLVIII. *A.* Fig. 1, spikelet; 2, flower; 3, ovary, stamens, and squamulæ:—*all magnified.*

3. **Dichelachne stipoides** (Nob. in Fl. N. Zeal. i. 294. t. 66); cæspitosa, glaberrima, polita, foliis elongatis strictis setaceo-involutis, panicula erecta contracta pauciflora parce ramosa, glumis lævibus longe setaceo-acuminatis florem $\frac{1}{3}$ excedentibus, paleis subcoriaceis inferiore sericeo-villosa, arista geniculata glaberrima flore bis–ter longiore. (*Gunn,* 1490.)

Hab. Abundant, especially near the sea.—(Fl. Nov.) (*v. v.*)

Distrib. Extratropical Australia and New Zealand.

Also found in New Zealand, growing, as in Tasmania, near the sea.—A handsome, densely tufted, rigid, wiry, smooth and polished, yellow Grass, often forming large tussocks, with the habit and appearance of a *Stipa.*—*Culms* $1\frac{1}{2}$–3 feet high. *Leaves* slender, involute, wiry, erect, terete. *Panicle* contracted, 4–6 inches long, strict, erect, few-flowered, and sparingly branched; branches short, capillary, erect. *Glumes* $\frac{1}{2}$–$\frac{3}{4}$ inch long, white or yellow, membranous, thin and shining, lanceolate, with a long slender point. *Flower* shorter than the glumes, covered with soft, silky, spreading hairs. *Paleæ* rather coriaceous; lower with two small teeth at the top, one on each side the awn, which is curved, about an inch long, and quite glabrous.

Gen. XI. PENTAPOGON, *Br.*

Spiculæ 1-floræ; flore stipitato, basi barbato. *Glumæ* 2, subæquales, carinatæ, subaristatæ, flore minores. *Paleæ* 2, inferior apice 5-aristata, arista intermedia majore tortili, superior minor mutica. *Squamulæ* acinaciformes.—Gramina *Australasica et Tasmanica;* foliis *planis v. involutis;* spiculis *paniculatis;* panicula *compacta.*

A small genus, confined to Australia and Tasmania.—*Leaves* flat. *Culms* simple or branched at the base. *Panicle* long, dense, crinite from the number of awns. *Spikelets* one-flowered, without any rudiment or pedicel of a second; flower bearded below, stalked. *Glumes* nearly equal, keeled, very acuminate, almost awned, shorter than the flower. *Paleæ* two, the lower with a narrow top ending in five rigid awns, of which four arise from the teeth, the fifth, larger, twisted, rises from the back of the palea behind and between the others. (Name *πεντα, five,* and *πωγων, a beard;* in allusion to the five awns.)

1. **Pentapogon Billardieri** (Br. Prodr. 173); annua, cæspitosa, villosa v. pubescens, rarius glaberrima, culmis erectis sulcatis, foliis involutis, panicula subnutante contracta aristis flexuosis crinita, glumis subaristatis ciliatis, palea inferiore scaberula dura aristis brevioribus duplo longiore, arista intermedia geniculata glumis bis–ter longiore.—*Beauv. Agrost. t.* viii. *f.* 11. *Kunth, En.* i. 239. Agrostis quadrifida, *Lab. Fl. Nov. Holl.* i. *p.* 20. *t.* 22. (*Gunn,* 1476, 1477, 1478.)

Hab. Probably common: Hobarton, *Oldfield;* Cheshunt, *Archer;* Launceston, *Gunn.*—(Fl. Nov.)

Distrib. Victoria.

Very variable in size and hairiness, smooth or softly villous, the culms sometimes 6 inches high, almost

filiform, with a very few-flowered panicle, at others stout, 2 feet high.—*Leaves* involute, smooth or downy. *Panicle* pale-coloured and shining, 2–6 inches long, narrow, much like that of *Dichelachne crinita*, drooping, covered with the long flexuose awns. *Glumes* ciliate. *Lower palea* narrow, rigid, firm, smooth or scaberulous, half as long as the shorter awns. *Long awn* often purple, twice or thrice as long as the glumes, bent, twisted. *Upper palea* narrow, with two nerves, ciliated towards the entire top.

Gen. XII. AGROSTIS, *L.*

Glumæ 2, unifloræ, subæquales, carinatæ, muticæ, flore majores. *Flos* sessilis v. pedicellatus, interdum basi rudimento secundi suffultus. *Paleæ* 2, inferior mutica v. dorso aristata; *arista* haud aut vix tortili; superior bicarinata, interdum minima v. obsoleta. *Squamulæ* 2, subintegræ. *Stamina* 3. *Caryopsis* libera.—Gramina *cæspitosa;* foliis *planis involutisve;* paniculis *diffuse ramosis, ramis sæpius verticillatis, rarius brevibus v. in spicam cylindraceam confertis.*

A large genus of Grasses, most abundant in temperate and cold climates, advancing as near to either Pole as any other phænogamic plants do.—*Culms* often tufted. *Leaves* flat or involute. *Panicles* lax or dense, branches often whorled. *Glumes* two, nearly equal, keeled, one-flowered, with or without the pedicel of an upper flower. *Paleæ* two, lower awnless, or awned at the back (often both in the same species), upper two-nerved, rarely absent. *Awn* never or very slightly twisted. *Squamulæ* two. *Stamens* three. *Caryopsis* quite free. (Name from αγρος, *a field*, the species abounding in open places.)

§ 1. Trichodium.—*Flower sessile, with no rudiment or pedicel of a second. Upper palea* 0, *or much smaller than the lower; lower awnless, or with a short dorsal awn, not hairy or silky at the base, or slightly so.*

1. **Agrostis parviflora** (Br. Prodr. 170); parvula, tenella, glaberrima, culmis gracilibus cæspitosis, foliis planis angustis, panicula effusa capillari rariflora, glumis acuminatis florem excedentibus carina scabris, palea inferiore membranacea glaberrima truncata nervis inconspicuis arista dorsali inclusa v. 0, superiore minima v. 0.—*Nob. in Fl. N. Zeal.* i. 296. A. intricata, *Nees, in Hook. Lond. Journ. Bot.* ii. 413. A. gelida, *F. Muell. MSS.* (*Gunn,* 1011, 1448, 1449, 1471.) (Tab. CLVIII. *B.*)

Hab. Common in shady places, ascending to 4000 feet.—(Fl. Nov.–Jan.) (*v. v.*)

Distrib. Victoria, New Zealand.

A slender, tufted Grass, 6–8 inches high, erect or prostrate at the base, quite smooth.—*Culms* leafy upwards, or only at the base. *Leaves* very narrow, flat or involute. *Ligula* long, membranous. *Panicle* of few lax, capillary trichotomous branches, whorled in threes. *Spikelets* minute. *Glumes* about $\frac{1}{3}$ longer than the flowers, nearly equal, scabrid along the keel. *Lower palea* quite glabrous, very membranous, broad, truncate, with faint nerves. *Awn*, when present, as in some specimens from New Zealand, dorsal, slender, included. *Upper palea* wanting in my specimens.—Panicles green or purplish; alpine specimens growing in exposed places have rigid, subulate leaves, and very short culms. It is very nearly allied to the *A. alpina* of the European alps, but the awn, when present, is never basal in this, and the panicle is fewer-flowered.—Plate CLVIII. *B.* Fig. 1, spikelet; 2, flower; 3, stamens, squamulæ, and ovary; 4, caryopsis:—*all magnified.*

2. **Agrostis venusta** (Trin. Agrost. ii. 94); cæspitosa, tenella, foliis filiformibus setaceisve lævibus v. scaberulis, culmis gracilibus, panicula (pro planta) maxima effusa, ramis primariis verticillatis elongatis capillaribus trichotomis, spiculis longe pedicellatis, glumis inæqualibus acuminatis dorso carina ciliatis superiore $\frac{1}{3}$ longiore, palea inferiore membranacea glaberrima v. scaberula truncata arista dorso infra medium inserta incurva glumis $\frac{1}{3}$–$\frac{2}{3}$ longiore, superiore minima v. 0.—A. æmula, *Br., var.* pumila, *F. Muell. MSS.* Lachnagrostis Willdenowii, *Nees, in Hook. Lond. Journ. Bot.* ii. 412. (*Gunn,* 593, 1008.) (Tab. CLIX. *A.*)

Hab. Dry grassy places; abundant.—(Fl. Oct.–Jan.) (*v. v.*)

Distrib. Victoria.

Very similar to *A. parviflora* in slender habit, size, and general appearance, but conspicuously differing in the very much larger panicle, with more numerous, whorled, very slender, long branches, large spikelets, and the long awn inserted below the middle of the palea, which is usually rough. Also very near the European *A. vulgaris*, but the branches of the panicle are much longer; and to *A. Lyallii* of New Zealand, which has longer glumes and a silky palea.—Plate CLIX. *A*. Fig. 1, spikelet; 2, flower; 3, pistil, stamens, and squamulæ:—*all magnified.*

§ 2. Bromidium.—*Flower shortly pedicelled, with no rudiment or pedicel of a second. Upper palea present; lower with a fascicle of hairs at its base, and bi- to quadri-fid apex.*

3. **Agrostis quadriseta** (Br. Prodr. 171); cæspitosa, culmis vaginisque lævibus scaberulisve, foliis planis involutis v. setaceis, panicula coarctata cylindracea continua v. lobata rarius interrupta v. subeffusa, glumis acuminatis flore basi sericeo longioribus, palea inferiore lævi v. scaberula nervis 4 apice percurrentibus breviter 4-cuspidata, arista dorsali infra medium v. basin versus inserta inclusa v. glumis ½ longiora, superiore paulo breviore bidentata.—*Kunth, En.* 218. *Trin. Diss.* 204. *p.* iii. *t.* 33. Agrostis diaphora, *Trin. Agrost.* ii. 120. Avena quadriseta, *Lab. Fl. Nov. Holl.* i. *p.* 25. *t.* 32. Bromidium, *Nov. Act. Nat. Cur.* xvii. *Suppl.* ii. 154. B. quadrisetum, *Nees, in Hook. Lond. Journ. Bot.* ii. 416.

Var. *α. lobata;* elata, foliis latiusculis planis, panicula majuscula lobata, palea inferiore glabra.—A. lobata, *Br. Prodr.* 171. Bromidium lobatum, *Nees, l. c.* 415. (*Gunn,* 990.)

Var. *β. montana;* cæspitosa, foliis involuto-setaceis latisve brevibus, panicula subcylindracea lobata v. interrupta, palea inferiore scaberula marginibus pubescentibus. (*Gunn,* 991.)

Var. *γ. paniculata;* elata, foliis latis brevibus, panicula pyramidali, ramis inferioribus subverticillatis remotis patentibus reflexisve. (*Gunn,* 991.)

Hab. Abundant throughout the Island.—(Fl. Sept.–Dec.) (*v. v.*)

Distrib. Extratropical Australia, New Zealand.

An extremely variable and very common Grass, presenting no constant characters by which the above-defined varieties may be always known from one another.—*Culms* a span to 3½ feet high, smooth or rough, as are the leaves and sheaths. *Leaves* broad or narrow, short or long, smooth or scabrid. *Panicle* densely spicate, cylindrical and continuous, or lobed, or more open and pyramidal, with the lower branches remote and spreading. *Glumes* $\frac{1}{6}$–$\frac{1}{4}$ inch long, always longer than the flower, but very variable in this particular. *Flower* on a short, villous pedicel. *Lower palea* scaberulous, rarely quite smooth, hard, concave, contracted at the point, and then bifid or ending in four little awns, which are very variable in relative length; great awn dorsal, inserted below the middle or towards the base, bent, twisted below; *upper palea* shorter, with two nerves that are scabrous at the back above, with sometimes a minute rigid pedicel at its base. *Stamens* three.—I have examined a vast number of Australian, New Zealand, and Tasmanian specimens of this most variable Grass, vainly trying to divide them into species or constant varieties. Brown's specimens of *Agrostis montana* (in Brit. Mus.) resemble this, but have a slender panicle; florets as long as the glumes; palea rough, awned near the base.

§ 3. Deyeuxia.—*Flower sessile or shortly pedicelled, furnished at the base of the upper palea with the (usually plumose) pedicel of a second flower, which is sometimes, but very rarely, perfect.*

4. **Agrostis æquata** (Nees, in Hook. Lond. Journ. Bot. ii. 413); scaberula, culmis subelatis cæspitosis erectis foliosis, foliis planis ligula membranacea, panicula elongata effusa, ramis primariis plurimis verticillatis capillaribus pedicellisque scabris, glumis ovatis subacutis scabris flore paulo longioribus, paleis firmis nervis inconspicuis inferiore truncata mutica superiore subbidentata basi extus pedicello gracili.—(*Gunn,* 1005.) (Tab. CLIX. *B.*)

Hab. Probably common, but no habitat given, *Gunn*.—(Fl. Jan.)

A tufted, handsome Grass, 2–3 feet high, everywhere slightly rough to the touch, similar in many respects to *A. parviflora*.—*Culms* erect, leafy. *Leaves* flat, rather narrow, with a membranous ligula. *Panicle* large, 8–10 inches long, spreading, very many-flowered. *Primary branches* numerous, whorled, capillary, as well as the secondary and long pedicels of the small spikelets scabrid. *Glumes* equal, ovate, acute, hardly longer than the flower, very scabrid, especially along the keel. *Paleæ* rather coriaceous, with obscure nerves, awnless; lower truncate; upper nearly as long, with two small teeth at the tip, and sometimes a small tuft of hairs at the base.—Plate CLIX. *B*. Fig. 1, spikelet; 2, flower; 3, pistil, squamulæ, and stamens; 4, caryopsis:—*all magnified*.

5. **Agrostis Billardieri** (Br. Prodr. 171); scaberula, foliis latiusculis, panicula laxa, ramis primaris cito trichotomis, spiculis majusculis, glumis scaberulis glabrisve flore $\frac{1}{3}$ longioribus, carina scaberula, palea inferiore basi sericea 4-nervi, nervis percurrentibus lateralibus aristatis, arista ad medium paleæ inserta glumis $\frac{1}{2}$ ad bis longiore, palea superiore inferiore æquilonga lanceolata cuspidata setula $\frac{1}{3}$ longiore.—Deyeuxia Billardieri, *Kunth, Agrost. p.* 244. Lachnagrostis Billardieri, *Trin. Diss. in Index.* Avena filiformis, *Lab. Fl. Nov. Holl.* i. *p.* 24. *t.* 31, *non Forst.* (*Gunn*, 592, 1007.)

Var. *β. setifolia;* foliis anguste setaceis, arista prope basin paleæ inserta.

Hab. Abundant throughout the Island.—(Fl. Oct.–Jan.) (*v. v.*)

Distrib. New South Wales, Victoria, and New Zealand.

A very elegant Grass, closely allied to the two following, if indeed all three be not varieties of the same species.—*Culms* tufted, $1\frac{1}{2}$ foot high. *Leaves* 6 inches long, $\frac{1}{3}$–$\frac{1}{2}$ inch broad, flat, smooth or rough to the touch. *Panicle* very lax, scabrid; *branches* very slender, whorled, trichotomous; *pedicels* long, slender. *Spikelets* larger than in the allied species, $\frac{1}{4}$–$\frac{1}{3}$ inch long, often purple. *Glumes* narrow, smooth or scabrid, always scabrid at the keel. *Lower palea* silky at the base, $\frac{2}{3}$ as long as the glume, with four nerves that project at the truncate top, the lateral of which are produced into short awns. *Awn* inserted at the middle of the palea, bent, one-half or twice as long as the glumes. *Upper palea* as long as the lower, with two short points, longer than the silky pedicel at its back.

6. **Agrostis æmula** (Br. Prodr. 172); glaberrima v. scaberrima, foliis latiusculis angustisve, paniculæ laxæ ramis primariis elongatis capillaribus trichotomis, glumis (pallidis) glabris carina scaberula flore duplo longioribus, palea inferiore sericea brevi late truncata nervis 4 percurrentibus breviter 4-cuspidata, arista dorso ad medium paleæ inserta glumis duplo longiore, nervis lateralibus rarius elongatis, palea superiore inferiore breviore obtusa v. bidentata setula plerumque brevissima.—Agrostis Forsteri, *Ræm. et Schult. Syst.* ii. 359. ? A. semibarbata, *Trin. Agrost.* ii. 132. A. retrofracta, *Schrad. in Herb. Hook.* Deyeuxia Forsteri, *Kunth, Gram.* 177; *Agrost. p.* 244; *Nob. in Fl. N. Zeal.* i. 298. A pilosa, *A. Rich. Voy. Astrol.* 134. *t.* 23 (*setula omissa!*). Avena filiformis, *Forst. Prodr.* 46. Lachnagrostis Forsteri, *Trin. Diss. Gram. Uniflor.* 217. L. æmula, *Nees, in Hook. Lond. Journ. Bot.* ii. 412. Deyeuxia æmula, *Kunth, Gram.* i. 77. (*Gunn*, 592, *in part*, 1006, 1447.)

Hab. Abundant throughout the Island.—(Fl. Oct.–Jan.) (*v. v.*)

Distrib. Extratropical Australia, New Zealand, Norfolk Island.

Generally a taller plant than *D. Billardieri*, with many more, much smaller, pale-green spikelets, and more silky flowers.—*Culms* 1–3 feet high. *Leaves* flat, broad or narrow, quite smooth or scabrous. *Panicle* 4–8 inches long, of very numerous whorled, slender branches, that generally do not divide so soon as in the former species. *Pedicels* very slender. *Spikelets* $\frac{1}{8}$–$\frac{1}{6}$ inch long. *Glumes* smooth, except along the keel, twice as long as the flower, and half as long as the awn. *Lower palea* very silky all over, truncate, the teeth produced into short points. *Awn* inserted at the middle. *Upper palea* shorter, blunt or two-toothed. *Setula* generally very small.—This plant is the *Avena filiformis* of Forster, in Herb. Hook., and also of Labillardière, in Herb. Hook. Mr. Brown

however refers Labillardière's plant to his *A. Billardieri*, with which the figure in Lab. Plant. Nov. Holl. agrees. The *A. æmula* appears an equally common and variable plant in Australia, Tasmania, and New Zealand, as *Agrostis canina* is in Europe.

7. **Agrostis montana** (Br. Prodr. 171); lævis v. scaberula, foliis plerumque setaceis filiformibus caulinis vagina elongata scaberula, panicula erecta contracta subcylindracea, ramis erectis, spiculis subimbricatis, glumis scaberulis acuminatis flore æquilongis, palea inferiore scaberula chartacea apice contracta 4-cuspidata, arista basi torta versus basin paleæ inserta glumis $\frac{3}{4}$ longiore, superiore paulo breviore bidentata dorso apicem versus scaberula setula (flore secundo imperfecto rarius terminata) longe villosa bis longiore. (*Gunn*, 1479.) (Tab. CLX. *A.*)

Hab. Common on the mountains.—(Fl. Jan.)

Distrib. Alps of Victoria.

Very like some states of *Agrostis quadriseta*, but the panicles are smaller, the glumes no longer than the flower, and there is a villous setula at the base of the latter.—A foot and a half to a span high. *Leaves* much shorter than the culms, smooth or scaberulous to the touch; *sheaths* broad or narrow; *lamina* involute or flat, those on the culm with long sheaths. *Panicle* $1\frac{1}{2}$–3 inches long, erect, narrow, with loosely imbricated, erect spikelets, $\frac{1}{5}$ inch long. *Glumes* equal, sharp, scaberulous. *Lower palea* hard, scabrid, with two or four short points at the contracted tip. *Awn* inserted below the middle, twisted below, bent at the middle, not twice as long as the glumes. *Upper palea* shorter, with two nerves, which are scabrid at the back towards the bifid top. *Setula* half the length of the upper palea, with long, spreading, silky hairs.—A variable plant; alpine specimens have short, setaceous leaves; those from lower elevations have broader sheaths and flatter blades. I have occasionally seen a second imperfect flower produced on the setula.—Plate CLX. *A.* Fig. 1, spikelet; 2, flower; 3, pistil, squamulæ, and stamens; 4, caryopsis:—*all magnified.*

8. **Agrostis scabra** (Br. Prodr. 172); cæspitosa, tota scaberula v. culmo superne lævi, culmis foliosis, foliis angustis planis vaginis elongatis, ligula membranacea, panicula laxa elongata, ramis primariis subfasciculatis, pedicellis glumisque scabris, glumis inter se et flore æquilongis ovatis acutis, palea inferiore rigida scaberula acuta mutica v. dorso ad medium breviter aristata, superiore paulo breviore bidentata setula parce villosa duplo v. triplo longiore.—Agrostis frigida, *Mueller, MSS.* A. rudis, *Rœm. et Schult. Syst.* ii. Lachnagrostis scabra *et* rudis, *Trin. Diss.* 217. *An var.* A. montanæ? (*Gunn*, 1461, 1462.) (Tab. CLX. *B.*)

Hab. Subalpine situations: foot of Mount Wellington, and Arthur's Lakes, etc.; common, *Gunn*, *Archer*, *Oldfield*.—(Fl. Jan.) (*v.v.*)

Distrib. Victoria and New South Wales.

A slender, scabrid Grass, growing in woods, with culms 1–3 feet long.—*Sheaths* generally very rough to the touch, as are the flat, narrow, dark-green leaves; *ligula* membranous. *Panicle* long, slender, 2–6 inches long; *branches* very rough, three or four together, in distant bundles, erect. *Spikelets* rough, often purple, $\frac{1}{6}$ inch long. *Glumes* as long as the flowers, equal, ovate, acute, rough. *Lower palea* very rough, hard, sharp, nerves indistinct, awnless, or with a short, hardly exserted awn inserted at about the middle of the back. *Pedicel* or *setula* at the base of the upper palea silky, variable in length, sometimes bearing a second but very imperfect flower, sometimes very small.—Plate CLX. *B.* Fig. 1, spikelet; 2, flower; 3, pistil, stamens, and squamulæ; 4, caryopsis:—*all magnified.*

9. **Agrostis contracta** (Muell. MSS.); culmis gracilibus elongatis, foliis planis vaginisque scaberulis, panicula nutante elongata contracta, ramis brevibus verticillatis 5–6-floris, glumis oblongo-lanceolatis acutis enerviis flosculum æquantibus, palea inferiore acuta mutica enervi coriacea scaberula basi subbarbata, superiore æquilonga, setula brevi. (Tab. CLXI. *A.*)

HAB. Stony places: South Huon River, *Oldfield.*

DISTRIB. Alps of Victoria.

A slender species, 2 feet high, with narrow, flat, scabrous foliage. *Panicle* 3–5 inches long, contracted; *branches* short, whorled. *Spikelets* green, erect. *Glumes* equal, acute, with one broad, green nerve. *Flower* very coriaceous. *Lower palea* acute, awnless, slightly scabrid.—PLATE CLXI. *A.* Fig. 1, spikelet; 2, flower; 3, pistil, stamens, and squamulæ; 4, caryopsis:—*all magnified.*

Gen. XIII. ECHINOPOGON, *Beauv.*

Spiculæ unifloræ, setula villosa accedente, coarctatæ. *Glumæ* æquales, flore æquilongæ. *Paleæ* 2, æquilongæ; inferior basi villosa, apice bifida, longe aristata; superiore bicarinata, apice bidentata; *arista* terminalis, haud torta. *Stamina* 3. *Ovarium* barbatum.—Gramen *scaberulum;* foliis *planis;* panicula *spicæformi v. capituliformi.*

The only known species is a very common extratropical Australian, Tasmanian, and New Zealand, harsh, scabrid Grass, differing from *Agrostis* in habit, capitate inflorescence, and terminal awn.—*Spikelets* crowded into an ovate or globose head, bristling with rigid, spreading awns. *Glumes* equal, acuminate, rigid, as long as the solitary flower, which has a silky tuft of hairs at the base. *Paleæ* nearly equal; the lower with a bifid top, and rigid, not twisted awn; upper with a small, stiff, villous bristle at its base. *Stamens* three. *Ovary* bearded at the top. (Name from εχινος, *a prickle,* and πωγων, *a beard.*)

1. **Echinopogon ovatus** (Pal. Beauv. Agrost. p. 42. t. 9. f. 5).—Agrostis ovata, *Forst. Prodr.; Lab. Fl. Nov. Holl.* i. *p.* 19. *t.* 21; *Br. Prodr.* 171. (*Gunn,* 590.)

HAB. Abundant throughout the Island, *Brown, Labillardière, Gunn.*—(Fl. Oct.–Dec.) (*v. v.*)

DISTRIB. Australia, New Zealand, and Norfolk Island.

A rough, scabrid, harsh Grass, growing in small tufts, common in extratropical Australia and New Zealand.—*Culms* 6 inches to 2 feet high, leafy below. *Sheaths* of upper leaves long; *ligula* short; *lamina* flat. *Panicle* contracted into a cylindrical, blunt, short or long ($\frac{1}{2}$–1$\frac{1}{2}$ inch long) head, conspicuous from the spreading, stiff, scabrid awns. *Spikelets* shortly pedicellate.

OBS. I know nothing of *E. Gunnianus,* Nees (Lond. Journ. Bot. ii. 413), which is described as having the habit of *Agrostis alba!* and as having been picked out of Gunn's specimens of *Agrostis parviflora* (n. 1011).

Gen. XIV. POLYPOGON, *Desf.*

Glumæ 2, subæquales, carinatæ, aristatæ, 1-floræ, flore multo longiores. *Paleæ* 2; *inferiore* apice truncata, emarginata, mutica v. sub apice aristata; *arista* haud tortili; *superiore* bicarinata. *Squamulæ* 2, subfalcatæ, ovarium superantes. *Caryopsis* intra paleas libera. — Folia *plana;* paniculæ *ramosissimæ, sæpius contractæ, spicæformes;* spiculæ *pedicello continuæ.*

Very elegant, often sea-side Grasses, conspicuous for the white awns on the pale, silky, contracted panicles. There are but few species, and these scattered over various temperate and tropical regions.—*Glumes* longer than the solitary flower, nearly equal, keeled, awned, one-flowered. *Paleæ* two; lower abruptly notched at the tip, awnless, or with an awn below the tip; upper two-nerved. *Scales* two, longer than the ovary. *Seed* free, but included within the paleæ. (Name from πολυ, *many,* and πωγων, *a beard.*)

1. **Polypogon Monspeliensis** (Desf.); culmis simplicibus erectis, panicula coarctata subcylindracea spicæformi oblonga obtusa densiflora, glumis pubescentibus ciliatis bilobis arista $\frac{1}{2}$–$\frac{1}{3}$ brevioribus, palea inferiore truncata aristata, arista glumas vix superante.—P. imitans, *F. Muell. MSS.* (*Gunn,* 1460.)

HAB. Marshes near Launceston, *Gunn;* Richmond, *Oldfield.*—(Introduced?)

Distrib. Extratropical Australia, Europe, Middle and South Asia, North and South Africa, North and South America (probably often an introduced plant).

Culms tufted, erect, leafy, a span to a foot high. *Leaves* flat, $\frac{1}{3}$–$\frac{1}{4}$ inch broad, slightly scabrid. *Panicle* contracted into a dense cylindrical spike, 1–1½ inch long, nearly white, and covered, as it were, with long, spreading hairs, which are the awns. *Awns* of the glumes three times longer than the glumes; those of the downy palea hardly exserted.

Gen. XVI. PHRAGMITES, *Trin.*

Spiculæ 3–6-floræ; floribus distichis, remotiusculis, sericeis, plumosis, infimo ♂, reliquis hermaphroditis. *Glumæ* 2, acutæ, carinatæ; superior major (interdum monandra). *Paleæ* 2, inferior angusta, subulata; superior bicarinata. *Squamulæ* 2, integræ.—Gramina *elata, potamobia;* foliis *latis, planis;* paniculis *ramosissimis, diffusis.*

A genus consisting of a few large, tall, handsome Grasses, almost always growing in water: the species are found in all parts of the globe, the Tasmanian one being particularly widely distributed.—*Leaves* broad, flat, harsh. *Panicle* large, much branched, dark-purple, of large spikelets, which are three- to six-flowered. *Flowers* rather remote, distichous, very silky with long hairs, lower male, the rest hermaphrodite. *Glumes* narrow, sharp, keeled. *Lower palea* elongate, narrowed into a short awn. (Name from φραγμιτης, *an enclosure;* the Reeds being used for fencing.)

1. **Phragmites communis** (Trin. Fund. 134); foliis elongato-lanceolatis longissime acuminatis, panicula erecta demum nutante effusa, glumis subaristatis inæqualibus floribus 4–5 longe sericeis brevioribus, palea inferiore aristato-acuminata.—*Kunth, En.* i. 251. Arundo Phragmites, *Linn. Sp. Pl.* 120; *Br. Prodr.* 183. (*Gunn,* 418.)

Hab. Abundant in watery places: throughout the Colony.—(*v. v.*)

Distrib. Australia, and most temperate and some tropical countries. (Native of England.)

The largest Tasmanian Grass, 4–8 feet high, smooth, stout, erect. *Leaves* flat, harsh, with long narrow points. *Panicle* purple, 8–18 inches long, at first erect, then drooping, very feathery from the long silky hair of the flowers, which grows as the latter advance. *Glumes* unequal, almost awned, longer than the flowers. *Flowers* four or five, remote, lower palea very long.—This plant is the common English "Reed" much used for thatching, etc.

Gen. XVII. DESCHAMPSIA, *Pal. Beauv.*

Spiculæ 2–3-floræ; *floribus* distichis, summo tabescente. *Glumæ* 2, carinatæ, muticæ, subæquales, floribus breviores. *Paleæ* 2; *inferior* supra basin aristata, apice truncata, 4-dentata; arista brevi, recta; *superior* apice bifida, mutica. *Squamulæ* 2, integræ. *Caryopsis* libera.—Spiculæ *paniculatæ, pedicellatæ.*

This genus is most abundant in the temperate and Arctic regions of the Northern Hemisphere, but is also found in Fuegia, Tasmania, and New Zealand.—*Culms* slender, often branched. *Leaves* flat or convolute. *Spikelets* panicled, shining, pedicellate, two- or three-flowered, the upper flower imperfect. *Glumes* two, keeled, awnless, nearly equal, shorter than the flowers. *Lower palea* truncate, four-toothed, with a short, straight awn from above the middle; *upper* with two nerves, bifid, awnless. *Scales* entire. (Named in honour of *M. Deschamps*, one of the naturalists appointed to Lapeyrouse's disastrous expedition.)

1. **Deschampsia cæspitosa** (Pal. Beauv. Agrost. 91. t. 18. f. 3); glaberrima, nitida, culmis cæspitosis, foliis plerumque rigidis involutis, panicula diffusa, rhachi lævi, ramulis verticillatis scabridis, glumis glabris, floribus 2 æquilongis acutis, paleis glaberrimis superiore basi sericea apice erosa arista æquilonga

dorso ad medium inserta, superiore bifida æquilonga, setula ad basin floris secundi pedicellati villosa.—*Nob. in Fl. N. Zeal.* i. 301. Aira cæspitosa, *Linn. Sp. Pl.* 96. A. Kingii, *Fl. Antarct. p.* 376. *t.* 135. A. australis, *Raoul, Choix des Plantes, p.* 12? (*Gunn,* 1464, 1465.)

Hab. Frequent in wet places, on low grounds, and the mountains.—(Fl. Nov.) (*v. v.*)

Distrib. Victoria, New Zealand, Fuegia, throughout temperate and Arctic Europe, Asia, and North America. (Native of England.)

A very common and beautiful Grass, usually perfectly smooth, pale-yellow, and shining.—*Culms* tufted, 6 inches to 2½ feet high, slender, wiry. *Leaves* involute, sometimes setaceous. *Panicle* 3 inches to a foot long, loose, effuse; *branches* slender, whorled or fascicled, rough. *Spikelets* shining, yellow-green or purple, ⅛ inch long, two-flowered, with the villous pedicel of a third. *Glumes* nearly equal, acute, as long as the flowers, which are silky at the base, the upper on a long pedicel. *Lower palea* truncate, toothed at the tip with a short dorsal awn; *upper* as long, bifid.

Gen. XVIII. TRISETUM, *Kunth.*

Spiculæ 2–4-floræ; *flore* summo interdum tabescente. *Glumæ* 2, carinatæ, muticæ, subæquales v. inæquales, floribus breviores. *Paleæ* 2; *inferior* bifida, dorso aristata, rarius mutica, arista tortili; *superior* bicarinata. *Caryopsis* libera, glabra.—Gramina *plerumque monticola;* foliis *planis v. involutis;* paniculis *spicato-confertis, rarius diffusis.*

The species of *Trisetum* are not numerous, and are generally mountain plants. One (*T. subspicatum*) is found on the mountains of most parts of the globe, when these are of sufficient altitude, inhabiting the Antarctic islands of Fuegia, the Falkland Islands, Campbell's Island, and Tasmania, but has not hitherto been found in New Zealand.—*Culms* tufted. *Leaves* flat or convolute, smooth or downy. *Panicles* generally contracted and spike-like. *Spikelets* two- to four-flowered, the upper flower often incomplete. *Glumes* two, unequal or nearly equal, keeled, awnless, shorter than the flowers. *Lower palea* bifid, with two subulate teeth at the top, awned at the back (rarely awnless); *awn* twisted. *Ovary* glabrous. (Name from *tres,* three, and *seta,* a bristle.)

1. **Trisetum subspicatum** (Pal. Beauv. Agrost. 88); cæspitosum, foliis culmo brevioribus planiusculis glabris pubescentibusve, culmo superne præcipue tomentoso, panicula subspicata densa subcylindracea, spiculis breve pedicellatis nitidis, glumis acuminatis puberulis floribus 2–3 brevioribus, palea inferiore puberula acute bifida, arista retorta infra apicem inserta paleam æquante v. superante.—*Kunth, En. Pl.* i. 295; *Nob. in Flor. Antarct.* i. *pp.* 97 *et* 377. Aira subspicata, *Linn. Sp. Pl. ed.* ii. 95. (*Gunn,* 1484.)

Hab. Common in alpine localities: Arthur's Lakes, etc., *Gunn, Archer.*—(Fl. Jan.) (*v. v.*)

Distrib. Arctic Europe, Asia, and America, mountains of Middle and Southern Europe, of Asia from the Himalaya northward, and of both North and South America, Fuegia, the Falkland Islands, and Campbell's Island.

An inconspicuous but very widely distributed Grass, variable in size and habit, 6–18 inches high, densely tufted.—*Leaves* soft and herbaceous, 4–8 inches long, smooth and glabrous, or pubescent. *Culms* erect, always more or less downy, especially below the panicle. *Panicle* 1–3 inches long, much contracted, spicate and cylindrical. *Spikelets* imbricated, on very short pedicels, pale greenish-white, shining, 2 lines long, two- or three-flowered. *Stalks* of the florets with long hairs. *Lower palea* downy, bifid, with two sharp teeth, and a recurved awn inserted a short distance below the apex, as long as or longer than the palea. In Tasmanian specimens the leaves are quite glabrous, but are often very downy in other parts of the world.

Gen. XIX. DANTHONIA, *DC.*

Spiculæ 2–8-floræ; *floribus* distichis, summo tabescente. *Glumæ* 2, subcarinatæ, muticæ, subæquales, flores æquantes v. superantes. *Paleæ* 2; *inferior* barbata v. nuda, concava, multinervis, apice late et profunde bifida, inter lacinias muticas v. aristato-subulatas aristata; *arista* basi complanata, torta, v. brevissima, recta. *Squamulæ* 2, integræ, glabræ v. pilosæ. *Ovarium* stipitatum. *Caryopsis* compressa, libera. —Gramina *cæspitosa, plerumque rigida;* foliis *planis v. involutis;* spiculis *majusculis, pedicellatis, racemosis v. paniculatis.*

Generally harsh, tufted Grasses, growing in dry soils and climates, as Australia, South Africa, and the South of Europe. The Tasmanian species are extremely difficult of discrimination, and I suspect that the first three should be reduced to only one.—*Leaves* flat or involute. *Panicles* rather contracted, of few large, often shining spikelets. *Flowers* two or more, the upper often imperfect. *Glumes* two, awnless, nearly equal, as long or longer than the flowers. *Lower palea* concave, many-nerved, bearded, bifid at the point, with a long or short flattened twisted awn. *Ovary* smooth, stipitate. *Seed* compressed. (Named in honour of *M. Danthoine*, a French Botanist.)

§ 1. *Lower palea furnished with several tufts of silky hairs on the sides.*

1. **Danthonia pilosa** (Br. Prodr. 177); culmis foliis setaceis vaginisque plus minusve molliter laxe patentim pilosis, panicula coarctata lanceolata, spiculis 6-floris glumis brevioribus, palea inferiore basi medioque barbata, fasciculis superioribus pilorum raris brevibus, aristis lateralibus elongatis palea longioribus glumis inclusis exsertisve, intermedia torta flosculo bis–ter longiore.—*Trin. Sp. Gram.* i. *t.* 51. *Nob. in Fl. N. Zeal.* i. 303. D. Gunniana, *Nees, Lond. Journ. Bot.* ii. 417. (*Gunn,* 585, 998.)

HAB. Abundant throughout the Island.—(Fl. Oct.–Jan.) (*v. v.*)

DISTRIB. New South Wales, Victoria, New Zealand.

A slender, tufted, rigid, wiry Grass.—*Leaves* setaceous, and culms (a span to 2 feet high) more or less covered with long scattered hairs. *Panicle* contracted, lanceolate or ovate, pale-green, 1½–3 inches long. *Spikelets* erect, shining, with brown awns, six-flowered, ½ inch long. *Glumes* longer than the flowers. *Lower palea* with a tuft of silky hairs at the base, and a few small tufts above the middle; lateral awns twice as long as the palea, as long or longer than the glumes, half as long as the twisted middle awn.

2. **Danthonia semi-annularis** (Br. Prodr. 177); culmis vaginis foliisque glaberrimis, ore vaginæ longe barbato, foliis involutis elongatis setaceisve, panicula contracta pauciflora subsimplici, glumis floribus 5–6 multo longioribus, palea inferiore basi medioque barbata, fasciculis superioribus pilorum aristis lateralibus (palea æquilongis brevioribusve) æquilongis v. ½ brevioribus, arista intermedia torta glumis æquilonga v. paulo longiore.—*Lab. Fl. N. Holl.* i. *p.* 26. *t.* 33; *Trin. Sp. Gram.* v. *t.* 52; *Nob. in Fl. N. Zeal.* i. 303. (*Gunn,* 1455, 1457.)

HAB. Abundant throughout the Island.—(Fl. Oct.–Jan.) (*v. v.*)

DISTRIB. Extratropical Australia and New Zealand.

None of my specimens of this very common and variable Grass agree exactly with Mr. Brown's description or with Labillardière's or Trinius's figures; nevertheless, after a very careful study of many forms and specimens from Tasmania and New Zealand, and of Labillardière's original ones, I am constrained to consider that neither plates nor descriptions answer to the common Tasmanian state of the plants, which have a short simple raceme, and awns generally longer than the glumes.—*Culms* 6–20 inches high, and leaves and sheaths quite smooth and glabrous; mouth of the latter with long silky hairs. *Panicle* 2–4 inches long, narrow or effuse, eight- to fifteen-flowered, sparingly branched. *Glumes* ½ inch long, white or purple, five- or six-flowered. *Flowers* much shorter than the glumes, with an exserted, twisted middle awn (not so long, stout, and dark as *D. pilosa*). *Lower palea*

villous at the base, and with a series of tufts of hairs above the middle, which are generally shorter than the lateral awns: the latter do not exceed the glumes in length.—In New Zealand this Grass is as common and more variable than in Tasmania.

3. **Danthonia setacea** (Br. Prodr. 177); glaberrima, culmis foliis setaceis vaginisque glaberrimis, ore longe barbatis, panicula subsimplici, glumis (magnis) purpureis floribus 5 longioribus, palea inferiore basi medioque barbata, fasciculis superioribus pilorum palea æquilongis, aristis lateralibus filiformibus glumam æquantibus, intermedia torta longe exserta.—(*Gunn*, 1454.)

Hab. Northern and central parts of the Island; common.—(Fl. Nov.)

Distrib. Victoria.

A stout, tufted species, very closely allied to *D. semi-annularis*, if not a mere variety of that plant, differing in the longer glumes, ¾ inch long, and longer black awns, of which the lateral are as long as the glumes, and the middle one one-third longer, and twisted.

4. **Danthonia subulata** (Hook. fil.); foliis brevibus filiformi-setaceis vaginisque patentim hispido-pilosis demum glabratis, culmis gracillimis, panicula brevi erecta subsimplici pauciflora (purpurea), glumis sub-5-floris, palea inferiore basi medioque dense barbata pilis brevioribus, aristis lateralibus gracilibus palea duplo longioribus ultra glumas exsertis, intermedia paulo longiore gracili subtorta.—*An* D. setacea, *Br.*? (*Gunn*, 1456.) (Tab. CLXI. *B.*)

Hab. Georgetown and Launceston, *Gunn*; Richmond, *Oldfield.*

Distrib. Victoria.

A small, slender, densely tufted, very pretty and distinct species.—*Leaves* very slender, filiform, pilose, curved, 2–3 inches long. *Culms* a span to 15 inches long, very slender. *Panicle* 1–2 inches long, small, erect, five- to seven-flowered. *Glumes* purple, much longer than the five florets. *Lower palea* densely silky, with shorter hairs than in the preceding species. *Lateral* awns slender, exserted, twice as long as the palea, not quite so long as the intermediate one.—Plate CLXI. *B.* Fig. 1, spikelet; 2, flower; 3, pistil, squamulæ, and stamens:—*all magnified.*

5. **Danthonia pauciflora** (Br. Prodr. 177); rigida, parvula, culmis cæspitosis foliisque brevibus subulatis glaberrimis, racemo paucifloro, ramulis pubescenti-ciliatis, glumis subacutis flosculis 3–4 longioribus, palea inferiore basi medioque barbata, serie superiore villorum paleam superantibus, aristis lateralibus late subulatis paleam æquantibus, intermedia valida geniculata glumis inclusa. (*Gunn*, 1458.) (Tab. CLXII. *A.*)

Hab. Top of Mount Wellington, Western Mountains, etc., *Gunn*, *Archer.*

Distrib. Alps of Victoria.

A very pretty and distinct little species.—*Culms* tufted, rigid, harsh, and wiry, quite smooth and glabrous, 3 inches high. *Leaves* 1 inch long, setaceous, blunt at the point. *Panicle* three- to six-flowered; *pedicels* pilose and ciliated. *Glumes* short, purple, ¼ inch long, with rather blunt points. *Flowers* three or four, short. *Lower palea* very villous, with tufts of long hairs above the middle; lateral awns broad, as long as the palea; middle one bent, very stout, short, included in the glumes.—Plate CLXII. *A.* Fig. 1, spikelet; 2, flower; 3, pistil, stamen, and squamulæ:—*all magnified.*

§ 2. Amphibromus.—*Lower palea hairy or silky, but without tufts of hairs.*

6. **Danthonia nervosa** (Hook. fil.); scaberula v. glabra, spiculis racemosis, glumis obtusiusculis erosis inæqualibus inferiore basi 3-nervi superiore 5-nervi, flosculis basi villosis, palea inferiore scaberula coriacea 7-nervi bifida apicibus erosis dorso supra medium arista tortili elongata, superiore bidentata.—Avena? nervosa, *Br. Prodr.* 178. A. hydrophila, *F. Muell. MSS.* Amphibromus nervosus, *Nees, in*

Hook. Lond. Journ. Bot. ii. 420. A. Neesii, *Steud. Syn. Glum.* 328. A. junceus, *Nees, in Herb. Lindl.* (*Gunn,* 1493, 995.) (TAB. CLXIII. *A.*)

HAB. Wet places: Formosa, *Gunn.*

DISTRIB. New South Wales, Victoria, and Swan River.

A tall, slender, smooth- or slightly rough-leaved Grass.—*Culms* slender, 2–3 feet high, leafy. *Leaves* long and slender, flat; *ligula* very long, sharp, and membranous. *Panicle*, or rather raceme, inclined or nodding, a span long and upwards, with few slender, distant, one- or two-flowered branches, which, as well as the pedicels, are rough with short hairs. *Spikelets* pale-green, nearly ½ inch long. *Florets* pedicelled, about five, terete, much longer than the glumes; *pedicels* with hairy tips. *Glumes* unequal, pale and transparent, blunt, erose; lower smaller, three-nerved at the base; upper five-nerved. *Lower palea* with a tuft of hairs at the base, opaque, hard, scabrous, seven-nerved, bifid at the top, the segments erose. *Awn* arising from above the middle, bent, twisted, black, rigid, stout, three or four times as long as the palea. *Upper palea* narrow, with two sharp tips, and ciliated keels.—PLATE CLXIII. *A.* Fig. 1, spikelet; 2, flower; 3, stamens, squamulæ, and pistil; 4, caryopsis:—*all magnified.*

7. **Danthonia Archeri** (Hook. fil.); panicula nutante, glumis 2–4-floris coloratis apice acutis erosis, floribus basi villosis, palea inferiore scaberula laciniis brevibus subintegris muticis v. aristatis. (*Gunn,* 995.) (TAB. CLXXII. *B.*)

HAB. Northern parts of the Island, *Gunn;* Cheshunt, *Archer.*—(Fl. Dec.)

Panicle broader than in *A. nervosus*, more erect; *lower branches* whorled. *Glumes* fewer-flowered. *Lower palea* more glabrous, with its divisions sometimes terminating in straight, black, subulate points or awns.—PLATE CLXXII. *B.* Fig. 1, spikelet; 2, flower; 3, stamens, squamulæ, and pistil; 4, caryopsis:—*all magnified.*

Gen. XXI. GLYCERIA, *Br.*

Spiculæ multifloræ; *floribus* distichis, imbricatis, hermaphroditis. *Glumæ* 2, concavæ, obtusæ; inferior brevior. *Paleæ* 2, subæquilongæ; inferior ovato-elliptica, obtusa v. obtuse 3-loba, 7-nervis. *Squamula* solitaria v. 2 plus minusve inter se connatæ. *Stamina* 2–3. *Caryopsis* oblonga, libera.—Gramina *aquatica, repentia;* foliis *planis;* paniculæ *simplices v. ramosæ;* ramis *fasciculatis, subverticillatis.*

A small genus of aquatic Grasses, whose seeds have been used as bread-corn in time of famine, and called Manna.—*Leaves* flat. *Culms* creeping below. *Panicle* long, simple, and racemose, or more branched with whorled branches. *Glumes* concave, blunt, many-flowered. *Flowers* numerous, imbricated on a flexuous rachis, all hermaphrodite. *Lower palea* elliptical, oval, blunt, or with three blunt teeth and seven nerves; upper rather shorter. *Stamens* two or three. *Seed* free. (Name from γλυκερος, *sweet;* in allusion to the eatable grains.)

1. **Glyceria fluitans** (Br. Prodr. 179); scaberula v. glabrata, panicula suberecta elongata rara, ramulis paucifloris, glumis inæqualibus 1-nerviis, floribus 5–7 rhachi flexuosa remotis, palea inferiore mutica 7-nervi scaberula subacuta.—Festuca fluitans, *Linn. Sp. Pl.* iii. Poa fluitans, *Engl. Bot. t.* 1520. (*Gunn,* 994.)

HAB. Wet places; common.—(Fl. Nov.) (*v. v.*) (Native of Britain.)

DISTRIB. Australia, India, Europe, Northern Asia, North Africa, Northern and tropical America.

A tall Grass, 2–4 feet high, with slender, smooth or scabrid culms.—*Leaves* flat, with a membranous ligula. *Panicle* a span to a foot long, suberect or nodding, with few, slender, distant, sessile or pedicelled spikelets, that are five- to seven-flowered, and each ½–¾ inch long. *Glumes* unequal, blunt, one-nerved. *Florets* distant, on a flexuous rachis. *Lower palea* blunt, seven-nerved, scabrous. *Squamula* solitary, fleshy. *Stigmas* very much divided.

2. **Glyceria stricta** (Nob. in Fl. N. Zeal. i. 304); glaberrima, culmis cæspitosis strictis foliosis, foliis brevibus strictis involutis, panicula stricta erecta contracta, ramis pedicellisque brevibus strictis, glumis inæqualibus acutis superiore 3-nervi, flosculis 6–14 confertis, palea inferiore glaberrima acuta coriacea, nervis inconspicuis, squamula oblonga.—Poa Syrtica, *Muell. MSS.* (*Gunn*, 1463.) (TAB. CLXII. *B.*)

HAB. Marsh at Launceston, *Gunn.*—(Fl. Nov.)

DISTRIB. Victoria, New Zealand.

A very different-looking species from *G. fluitans*, of a pale-yellow colour.—*Culms* 1½–2 feet high, strict, stout, leafy throughout, perfectly glabrous everywhere. *Sheaths of leaves* long, striate, rather swollen; *ligula* short, broad, membranous. *Lamina* short, 2–4 inches, subulate, strict, erect, involute. *Panicle* 4–6 inches long, very slender, strict, with short, stout, erect, appressed branches. *Spikelets* terete, rather crowded, pale-yellow, almost shining, ⅓ inch long. *Flowers* six or seven to fourteen, closely imbricated. *Glumes* unequal, sharp; upper three-nerved. *Paleæ* quite glabrous, coriaceous; lower sharp, with obscure nerves. *Squamula* ovate.—Tasmanian specimens are much larger than the New Zealand ones, but not otherwise different.—PLATE CLXII. *B.* Fig. 1, spikelet; 2, flower; 3, squamulæ, pistil, and stamens; 4, caryopsis:—*all magnified.*

Gen. XXII. POA, *L.*

Spiculæ 2–8-floræ; *floribus* distichis, hermaphroditis, nunc basi lanatis, interdum abortu dioicis. *Glumæ* 2, muticæ, subæquales. *Paleæ* 2, muticæ; inferior obtusiuscula carinata v. concava; superior bicarinata. *Squamulæ* 2. *Stamina* 2–3. *Caryopsis* libera, v. paleæ superiori adhærens.—Gramina *plerumque extratropica*; foliis *planis, rarius setaceis*; spiculis *majusculis, pedicellatis, paniculatis, rarius racemosis v. sessilibus et spicatis.*

A very large genus, found in all parts of the world, but most frequent beyond the tropics and in cold climates, where they often form extensive pastures.—*Leaves* generally soft and flat, sometimes setaceous. *Spikelets* two- or many-flowered; *flowers* sometimes unisexual, glabrous, or webbed with wool at the base. *Glumes* awnless, nearly equal. *Lower palea* blunt, awnless. *Stamens* one to three. *Seed* free or adhering to the upper palea.—The species of this genus are extremely variable, especially those of Australia and New Zealand, which often assume widely different forms. (Name, the Greek one.)

1. **Poa australis** (Br. Prodr. 179); rigida, scabra v. glaberula v. polita, culmis dense cæspitosis foliis setaceo-involutis filiformibusve longioribus v. æquilongis, ligula brevissima, panicula effusa rarius contracta, ramis paucifloris inferioribus capillaribus, glumis scabris 3–7-floris, floribus remotis approximatisve, palea inferiore 5-nervi apice scariosa obtusa basi plus minusve lanata v. nuda.—P. australis, P. lævis, *et* P. plebeja, *Br. Prodr. l. c.*

Var. *α. Billardieri;* 1–2-pedalis, glaberrima, polita, culmis inferne ramosis foliis spithamæis tereti-involutis longioribus æquilongisve, panicula lanceolata contracta, spiculis confertis majusculis, glumis acutis floribusque 5 approximatis scabris basi parce lanatis: (descript. ab exempl. Labillard.).—Arundo poæformis, *Lab. Fl. Nov. Holl.* i. 27. *t.* 35.

Var. *β. monticola;* glaberrima v. scaberula, culmis brevibus densissime cæspitosis pedalibus foliis setaceo-involutis longioribus, panicula ovata subcontracta v. effusa, spiculis majusculis 3–7-floris, glumis acutis floribusque remotis scaberulis, palea inferiore subtruncata purpurea marginibus albis apice sæpissime membranacea basi parce villosa v. nuda.—P. lævis, *Br. Prodr. l. c.* (*Gunn*, 1466.)

Var. *γ. Sieberiana;* scabrida v. glaberrima, foliis setaceis filiformibus culmo æquilongis brevioribusve, panicula ovata contracta v. effusa, ramis inferioribus capillaribus elongatis, spiculis parvis purpureis

viridibusve 3–6-floris, glumis flosculisque remotis glabratis v. scaberulis, palea inferiore oblonga v. lineari basi parce lanata rarius nuda.—P. Sieberiana, *Kunth, fid. Nees, in Herb. Lindley.* P. effusa, *Nees, in Hook. Lond. Jour. Bot.* ii. 418. (*Gunn,* 596, 1010, 597.)

Var. δ. *capillifolia;* scabrida v. glaberrima, foliis capillaceo-setaceis culmo brevioribus, panicula contracta v. rarius effusa, ramis inferioribus capillaceis elongatis, spiculis viridibus parvis 3–6-floris, glumis flosculisque remotis scaberulis, palea inferiore oblonga v. lineari basi nuda. (*Gunn,* 596, 1469, 1468, 1470.)

Hab. Throughout Tasmania; most abundant. Var. *α.* By the sea-shore in sandy places. Var. *β.* Tops of all the mountains, forming the common pasture-grass. Var. *γ* and δ are the most common Grasses in the Island. Var. δ, "Silver Grass," not eaten by cattle (*Oldfield*).—(*v. v.*)

Distrib. Extratropical New Holland, and New Zealand.

I have, with reluctance, but latterly without hesitation, united the widely different-looking forms of *Poa australis* under one, after repeated examination of many hundreds of specimens collected in masses in many parts of Tasmania by Mr. Gunn, myself, and others, together with copious suites from New Holland and New Zealand, and I am further inclined to add to them the following (*P. affinis*). The *Festuca ovina* is one of the few equally variable British Grasses. The extreme states are: (1) a perfectly smooth, shining, stout Grass, with culms 2 feet high, branching below, long leaves that have broad sheaths, and rather compact panicles of scabrous ovate spikelets, having villous flowers placed close together; this I have called var. *α*; it is described from Labillardière's specimens (of *Arundo poæformis*) and Mr. Gunn's, but does not agree (in not having scabrid leaves) with Brown's character of *P. australis* under which Labillardière's plant is quoted as a synonym: (2) var. δ, a densely tufted Grass, often not so long as the finger (though sometimes 1½ foot high), with a dense brush of filiform, short or long leaves, a very slender culm, and effuse, capillary panicle, of small, nearly glabrous, green spikelets, having naked, linear, remote florets.—Between these widely different forms are the common one, of a rough or smooth, setaceous-leaved Grass, 1–2 feet high, with a slender culm, and effuse, erect, ovate panicle of green or purple spikelets.—*Glumes* scabrous, three- to seven-flowered. *Flowers* close or distant, oblong, or linear and narrow, glabrous or scabrous, bearded with long wool, or naked below.—I have no doubt that, as Mr. Brown suggests, his *P. plebeja*, *P. lævis*, and *P. affinis* are all common varieties of this one plant, but his descriptions do not enable me to identify the common Tasmanian forms, nor do I find that Nees von Esenbeck, who named a set of Mr. Gunn's Grasses for Dr. Lindley's Herbarium, has divided them at all satisfactorily.

2. **Poa affinis** (Br. Prodr. 179); glabra, scaberula v. scabrida, culmis elongatis foliosis, foliis elongatis planiusculis involuto-setaceisve, ligula brevissima, panicula elongata contracta, ramis inferioribus elongatis erectis, spiculis scabris ovato-lanceolatis contractis, glumis acutis, floribus subremotis obtusis subacutisve, palea inferiore 5-nervi inferne ciliata v. barbata.—P. australis, *β*; spiculis viridibus, foliis subinde planiusculis, *Nees, in Hook. Lond. Journ. Bot.* ii. 418. (*Gunn,* 1012, 595.)

Hab. Northern parts of Tasmania, *Lawrence, Gunn, etc.*

Distrib. Australia, south of the tropics, New Zealand.

I refer this doubtfully to Mr. Brown's *P. affinis*, which is described as having the leaves smooth below, whereas these are scabrid. It is a common Australian and New Zealand Grass, and is both smooth and scabrid in these countries, and in all it approaches far too nearly *P. australis*, if indeed it should not rather be pronounced a variety of that plant.—A much larger plant than *P. australis*, 2–3 feet high, with a coarse, stout, leafy culm. *Leaves* longer than the culm, involute or almost flat. *Panicle* nearly a span long, contracted, with erect, appressed branches, and small green spikelets. *Glumes* acute, rather scabrid. *Lower palea* sometimes almost sharp, naked or bearded at the base.

3. **Poa tenera** (Mueller, MSS.); debilis, glaberrima v. scaberula, culmis ramosis tenuibus foliosis,

foliis angustis planiusculis, ligula mediocri membranacea, panicula effusa, ramis capillaribus paucifloris, spiculis parvis pallidis 3–5-floris, floribus remotis, palea inferiore obtusa 5-nervi dorso marginibusque pubescente basi nuda v. parce barbata.—P. saxicola, *Br.?*, *var.* effusa, *Nees, in Hook. Lond. Journ. Bot.* ii. 418. (*Gunn*, 1009.) (Tab. CLXIV. *A.*)

Hab. Common in woods and shaded places, *Gunn, Oldfield, Archer.*—(*v. v.*)

Distrib. Victoria.

A much more flaccid, slender, and weaker straggling plant than any state of *P. australis*, well distinguished from it by the membranous ligula when that organ is present.—*Culms* slender, sometimes flaccid and climbing, 1–8 feet long, branched, leafy at the joints. *Leaves* very narrow, usually flat, green, with rather long, membranous ligulæ. *Panicle* slender, effuse or contracted; *branches* capillary. *Spikelets* few. *Glumes* three- to five-flowered, acute. *Flowers* distant. *Lower palea* glabrous, except at the back and margins, which are pubescent or ciliated, sometimes a little bearded at the base.—This cannot be Mr. Brown's *P. saxicola*, though M. Nees has so considered it in Herb. Lindley, the panicle being effuse, not simple and contracted, the ligula is often wanting, the leaves are very narrow, and often involute.—Plate CLXIV. *A.* Fig. 1, spikelet; 2, flower; 3, pistil, stamens, and squamulæ:—*all magnified.*

4. **Poa saxicola** (Br. Prodr. 180); culmis cæspitosis elongatis basi foliosis, foliis breviusculis latis planis scaberulis, ligula lata mediocri membranacea, panicula coarctata subsimplici, spiculis coloratis ellipticolanceolatis glabratis turgidis, glumis obtusis margine pubescentibus 3–4-floris, floribus confertis, palea inferiore obtusa lata coriacea enervi glaberrima margine pubescente, superiore carinis ciliatis. (*Gunn*, 1466.) (Tab. CLXIV. *B.*)

Hab. Mount Wellington, *Brown, Gunn.*

Quite a different-looking Grass from any state of *P. australis:* I have very few specimens of it.—*Culms* strict, 18 inches high, smooth, leafy at the very base. *Leaves* 3–4 inches long, broad, linear, flat, scaberulous; *ligula* broad, membranous. *Panicle* $1\frac{1}{2}$–$2\frac{1}{2}$ inches long, strict, erect, nearly simple, of few, short, appressed, one- to four-flowered branches. *Spikelets* shining, turgid, purplish. *Glumes* blunt, glabrous, with downy edges. *Flowers* closely imbricating, broad, and blunt. *Lower palea* smooth, glabrous, concave, coriaceous, purple, with white, downy edges; upper with two ciliated keels. *Squamulæ* ovate.—Having so few specimens, some allowance must be made for probable variations from this description.—Plate CLXIV. *B.* Fig. 1, spikelet; 2, flower; 3, squamulæ, stamen, and pistil:—*all magnified.*

Obs. I have what is probably a fifth Tasmanian *Poa*, from Mr. Gunn (1491), Penquite; glabrous, with smooth, short, plane leaves, and membranous ligula, long, slender culm, and effuse panicle of whorled branches; the spikelets and flowers are nearly smooth, smaller than in *P. saxicola*, and sparingly woolly or ciliated below.

Obs. *Poa annua*, L., has been introduced into Tasmania. (*Gunn*, 1472, 1483.)

Gen. XXIII. KŒLERIA, *Pers.*

Spiculæ 2–3-(rarius 3–4-)floræ, floribus distichis compressis nitidis scariosis. *Glumæ* carinatæ, muticæ, inæquales. *Palea* inferior acuta, mutica, v. apice v. infra apicem breviter aristata; superior apice bifida. *Squamulæ* 2, inæquales, 2–3-fidæ. *Caryopsis* libera.—Gramina *temperatis hemisphærii borealis australisque rara;* culmis *cæspitosis;* foliis *planis;* paniculis *confertis, spicæformibus;* spiculis *pedicellatis.*

A small genus of Grasses, scattered over the temperate regions of the northern hemisphere, of which one European and American species is found in Tasmania and New Zealand, and in many other parts of the world it is scarcely distinguishable generically from *Poa* or *Festuca*.—*Culms* tufted. *Leaves* flat or involute. *Spikelets* pedicelled, clustered into a dense cylindrical, whitish, shining spike, small, two- or three-, rarely many-flowered, the upper

flowers imperfect. *Glumes* keeled, unequal, awnless. *Lower palea* sharp, awnless or awned at the tip or back; upper bifid at the point. *Caryopsis* free. (Named in honour of *G. L. Kœler*, an author on French and German Grasses.)

1. **Kœleria cristata** (Pers. Synops. i. 97); glaberrima, v. vaginis foliisque puberulis, panicula spicata elongata erecta basi interrupta nitida, glumis subacutis 2–5-floris floribus brevioribus, palea inferiore acuminata v. breviter aristata.—*Fl. N. Zeal.* i. 305. Aira, *Linn.; Eng. Bot. t.* 648. (*Gunn*, 586, 587.)

HAB. Macquarrie Plains, and other parts of the Colony, *Gunn.*—(Fl. Nov.) (Abundant in Great Britain.)

DISTRIB. Extratropical Australia, New Zealand, Europe, temperate North Africa, India, South Africa, and North and South America.

A handsome Grass, 1–3 feet high, conspicuous for its white, shining, spiked panicle of compressed spikelets, awnless, or with inconspicuous awns.—Whole plant more or less downy or glabrous. *Leaves* flat, a span long, narrow. *Panicle* spiked, erect, 3–5 inches long, interrupted at the lower parts. *Spikelets* very variable in size, imbricate, erect, two- to five-flowered. *Glumes* shorter than the flowers, unequal, acute. *Lower palea* acuminate or with a short awn at the apex or back below the point.

Gen. XXIV. FESTUCA, *L.*

Spiculæ bi-multifloræ. *Glumæ* 2 (raro in § *Vulpia* 1), carinatæ, inæquales, acuminatæ, muticæ. *Paleæ* 2; inferior carinata, apice acuta v. aristata interdum bidenticulata; superior bicarinata. *Squamulæ* 2, bifidæ. *Stamina* 1–3. *Stigmata* terminalia v. lateralia. *Caryopsis* glabra, libera, v. paleæ superiori adhærens.—Folia *plana v. setacea;* spiculæ *plerumque pedicellatæ, paniculatæ v. racemosæ;* rachilla *articulata.*

A large genus of Grasses, almost confined to temperate and cold regions, forming extensive pasture-lands in the alps of Europe and elsewhere.—*Leaves* flat or subulate. *Spikelets* pedicelled, panicled, or racemose, rarely spiked. *Flowers* often numerous, on a jointed partial rachis. *Glumes* two (sometimes one in § Vulpia), keeled. *Paleæ* two; lower acute, keeled, often with a terminal awn, or rarely toothed or bifid at the apex. *Scales* two, bifid, smooth. *Stamens* one to three. *Styles* terminal, or inserted below the apex. *Caryopsis* free, or adhering to the upper palea.—I know of no certain technical character but the acuminate and often awned lower palea to separate this genus from *Poa*. (Name, a Latin one of uncertain application.)

a. *Lower palea entire at the apex.*

1. **Festuca duriuscula** (Linn. Sp. Pl. 108); stricta, erecta, glaberrima, culmis cæspitosis basi foliosis, foliis setaceo-involutis strictis erectis v. patulis, panicula elongata coarctata, ramis brevibus elongatisve paucifloris, glumis 6–8-floris inæqualibus acutis floribus brevioribus, floribus linearibus remotis scabridis, palea inferiore basi nuda acuminata aristata.—*Eng. Bot. t.* 470; *Fl. Antarct.* ii. 383; *Fl. N. Zeal.* i. 309. (*Gunn*, 994.)

HAB. Wet places: Formosa, *Gunn.*—(Fl. Nov.) (Native of England.)

DISTRIB. Temperate and Arctic Europe, Asia, and America, New Zealand, Chili, and Fuegia.

A widely-distributed Grass, found in almost all temperate and cold climates. It forms a great proportion of the alpine pasture Grass in the moorlands of the British Islands, and is extremely variable in stature and habit.—Quite smooth, generally shining. *Culms* densely tufted, leafy chiefly at the base, 1–3 feet high, strict, slender. *Leaves* setaceous, often long and filiform, sometimes short and rigid. *Panicle* an inch to a span long, erect, narrow, contracted or spreading, few-flowered; *branches* erect, long or short, slender. *Glumes* acuminate or acute, shorter than the flowers, four- to eight-flowered. *Flowers* narrow, remote, glabrous. *Lower palea* acuminate, awned, generally scabrid.

2. **Festuca (Vulpia) bromoides** (Linn. Sp. Pl. 109); annua, glaberrima, culmis plurimis dense cæspitosis foliosis, foliis filiformibus involutis, vaginis elongatis, ligula membranacea, panicula contracta unilaterali racemosa, ramis brevibus erectis, spiculis sessilibus 8–10-floris lævibus scaberulisve, glumis unilateralibus valde inæqualibus subulato-acuminatis, floribus approximatis anguste lanceolatis, palea inferiore longe aristata, arista scaberula.—*Engl. Bot. t.* 1411. F. plebeia, *Br. Prodr.* 183; *Fl. Antarct.* ii. 384. *Fl. N. Zeal.* i. 309. F. Stuartiana, *Steud. Syn. Glum.* 304. Vulpia rectiseta, *F. Muell. in Herb. Hook.*

Var. *β. tenella;* culmis brevibus capillaribus 1–3-floris.

Hab. Abundant in dry pastures, etc.—(Fl. Oct.–Jan.) (*v. v.*) (A native of England.)

Distrib. Throughout the northern temperate hemisphere; common also in the south, but generally introduced; Australia and New Zealand.

A very common Grass, native of Europe and (generally naturalized) of other parts of the world. It has possibly been introduced into Tasmania, though found by Mr. Brown there upwards of half a century ago.—An annual Grass, very variable in size, from 2 inches to 2 feet, always perfectly smooth. *Culms* densely tufted, simple, more or less leafy upwards, slender; in var. *β* as slender as a thread. *Leaves* narrow, involute, filiform; sheaths long. *Panicle* generally 1–3 inches long, erect, contracted, rather dense, sometimes reduced in var. *β* to one spikelet: *branches* short, erect, appressed. *Spikelets* rather crowded, shortly pedicelled, three- to ten-flowered, ½ inch long with the awns. *Glumes* narrow, subulate, the upper much the longest, strongly nerved, placed at one side of the base of the spikelet. *Flowers* close together on a slender rachis. *Lower palea* scabrous or smooth, concave, narrow, lanceolate, tapering into a long, scabrid, hair-like awn.

3. **Festuca distichophylla** (Hook. fil.); culmis brevibus ramosis rigidis glaberrimis lævibus foliosis, vaginis imbricatis, foliis distichis involutis setaceis strictis, ligula brevissima, panicula racemosa terminali pauciflora, spiculis sessilibus lævibus compressis 8–10-floris, floribus arcte imbricatis, glumis ovatis acuminatis floribus brevioribus, palea inferiore late ovata acuminata striato-nervosa.—Poa distichophylla, *Br. Prodr.* 182. Uniola distichophylla, *Lab. Fl. Nov. Holl.* i. *p.* 21. *t.* 24. (*Gunn*, 414.)

Hab. Northern coast, growing on the shore, often within high-water mark.—(Fl. Nov.)

Distrib. Extratropical coasts of Australia.

A rigid, harsh, perfectly smooth and polished Grass, forming large dense tufts near the sea.—*Culms* a span to 1½ foot long, much branched, leafless below. *Leaves* spreading or erect, on opposite sides of the culm; sheaths round; blade involute, setaceous, 1–3 inches long, stiff; ligula very short. *Panicle* an erect, short, ovate, compressed raceme of about five large, shortly pedicelled, compressed spikelets, each ⅓–½ inch long, and eight- to ten-flowered. *Glumes* ovate, acuminate, concave. *Flowers* closely imbricate, striated, broadly ovate, acuminate. *Stigmas* purple.—I regret being obliged to place this plant in *Festuca* in opposition to Mr. Brown's authority, who refers it to *Poa;* but I know of no natural limits between these two genera, and the only artificial one that appears useful or tenable lies in the comparative sharpness or bluntness of the lower palea, which in this plant is decidedly acuminate. The flowers are sometimes infested with the Ergot, which is a black cylindrical body, the diseased growth of the ovary after being attacked by a species of *Fungus.*

b. *Lower palea sometimes minutely toothed at the apex.*

4. **Festuca Hookeriana** (F. Muell. MSS.); elata, erecta, culmis vaginisque lævibus scaberulisve, foliis breviusculis planis coriaceis utrinque scaberulis, ligula brevi coriacea, panicula effusa nutante, ramis elongatis, spiculis majusculis 6–8-floris, glumis carina marginibusque ciliatis, inferiore 3-nervi superiore 5-nervi, rachilla pilosa v. barbata, palea inferiore 7-nervi apice aristata v. sub apice bifida breviter aristata carina scaberula, superiore apice bidentata carinis pectinatis. (Tab. CLXV.)

Hab. Cheshunt, *Archer.*—(Fl. Nov.)

Distrib. Alps of Victoria, *Mueller.*

This fine Grass resembles the *Festuca spadicea* of Europe, and still more the *F. Kingiana* of Fuegia. I have seen only one good Tasmanian specimen, and several Victoria ones, which latter, though all referred to one species by Mueller, present a good deal of variation, and may possibly belong to two. In all the young flowers, previous to expansion, the ovary has terminal stigmas, but in older ones, after flowering, the caryopsis appears to be obovate, deeply furrowed, almost bilobed, with the stigmas placed on the broad face below the apex; the ripe caryopsis again is nearly straight, with terminal stigmas. In some of Mueller's specimens the upper palea is quite entire, terminating in a short awn; in others, and in the Tasmanian, it is split at the apex, and the short, straight awn arises from the fork. This plant hence oscillates (like *Festuca Kingiana*) between *Festuca* and *Bromus*, or else the specimens are of two species, so like as to be almost undistinguishable, but yet belonging to two different genera!—A tall, stout, handsome Grass, 2–4 feet high. *Culms* and leaves smooth or scabrid. *Leaves* flat, rigid, coriaceous, rough. *Panicles* drooping, 6–10 inches long, with slender, spreading branches; the lower branches geminate. *Spikelets* few, distant, on ciliate pedicels, about ⅓ inch long, pale-green when young, six- to eight-flowered. *Flowers* rather distant, on a hairy or sparingly villous rachis. *Outer palea* with seven nerves, scabrid margins and keel, and a short, straight awn, either terminal or rising from the split apex of the palea. *Squamulæ* acuminate, obliquely lanceolate, bilobed. *Ovary* glabrous.—PLATE CLXV. Fig. 1, spikelet; 2, flower; 3, squamulæ, stamens, and pistil; 4, ovary; 5, caryopsis; 6, spikelet, from Victoria specimen; 7, young caryopsis from ditto; 8, caryopsis of ditto:—*all magnified.*

5. **Festuca littoralis** (Lab. Fl. Nov. Holl. i. 22. t. 27); glaberrima, culmis cæspitosis inferne ramosis erectis strictis rigidis foliosis, foliis erectis involutis teretibus apicibus pungentibus culmo longioribus, panicula elongata coarctata, ramis brevibus, spiculis (magnis) compressis, glumis lanceolatis acuminatis, floribus sub-6 imbricatis, palea inferiore pubescente carinata obscure 3-dentata basi nuda v. barbata.—*Br. Prodr.* 178; *Fl. Antarct.* i. *p.* 99. Poa littoralis, *Lab. Fl. Nov. Holl.* i. *p.* 22. *t.* 27. Arundo triodioides, *Trin. Sp. Gram.* iii. *t.* 351. Schœnodorus Billardierianus, *Nees, Lond. Journ. Bot.* ii. 419. S. littoralis, *Pal. Beauv. Agrost.; Fl. N. Zeal.* i. *p.* 309. (*Gunn*, 986.)

HAB. Abundant; rocks and sand-hills near the coast.—(Fl. Nov.) (*v. v.*)

DISTRIB. East, west, and southern coasts of extratropical New Holland; New Zealand; Lord Auckland's Island.

Forms dense hard tufts, of a pale-yellow colour.—*Culms* 1–3 feet high, and leaves perfectly smooth, glabrous and polished, shining, striated, rigid, wiry, branched at the base. *Leaves* involute, terete, sharp, almost pungent, longer than the culms. *Panicles* 3–10 inches long, slender, pale yellow-green, with a rigid rachis, and short, erect branches. *Spikelets* broad, compressed, five-flowered, ⅓–¾ inch long. *Glumes* acuminate, shorter than the flowers, which are pubescent. *Lower palea* sharp, three-toothed at the tip.

Gen. XXV. TRITICUM, *L.*

Spiculæ spicatæ, rachi parallelæ, tri-multifloræ, floribus distichis. *Glumæ* 2, suboppositæ, inæquales v. subæquales. *Paleæ* 2; superior bicarinata, carinis ciliatis. *Squamulæ* 2, integræ, sæpius ciliatæ. *Ovarium* apice pilosum. *Caryopsis* libera v. paleis adnata.—Folia *plana;* spiculæ *rachi continua spicatæ;* floribus *rachilla sæpius articulata sessilibus.*

This genus, which includes the cultivated Wheat, is found in various parts of the world.—*Culms* branched at the base. *Leaves* flat. *Spikelets* arranged in generally a dense spike, parallel to the unjointed rachis, three- to many-flowered. *Glumes* two, nearly equal. *Paleæ* two; upper with two ciliated keels. *Scales* two, entire, often ciliated. *Ovary* hairy at the top, free, or with the paleæ adhering to it. (Name originally given to the wheat grain, from *tritum*, beaten; in allusion to the operation of threshing.)

1. **Triticum scabrum** (Br. Prodr. 178); culmis cæspitosis gracilibus vaginisque lævibus (rarius

scaberulis), foliis planis v. involutis utrinque scabris (rarius lævibus) striatis, spica 2–10-flora, spiculis scaberulis 4–8-floris, glumis lanceolatis subæqualibus nervosis palea flosculo duplo brevioribus, palea inferiore basi lævi enervi superne scaberula carinata in aristam validam lente recurvam scabridam palea bis terve longiorem angustata.—*Fl. N. Zeal.* i. 311. Festuca scabra, *Lab. Fl. Nov. Holl.* i. *p.* 22. *t.* 26. Vulpia Browniana, *Nees, in Plant. Preiss.* ii. 107, *in note.* P. scabra, *Nees, in Hook. Lond. Journ. Bot.* ii. 419. (*Gunn,* 993.)

HAB. Common, especially in dry and sandy places near the sea, etc.—(Fl. Oct.–Dec.) (*v. v.*)

DISTRIB. Extratropical Australia and New Zealand.

A very common and variable Grass, never attaining so large a sized spikelet, and being generally more scabrid in Tasmania than in the moister climate of New Zealand.—*Culms* tufted, slender, 3 inches to 2 feet high, sometimes capillary with only one spikelet, varying in such cases just as *Festuca bromoides* does. *Culms* and *sheaths* generally quite smooth. *Leaves* usually very scabrid on both surfaces, 1–4 inches long, flat or involute. *Spike* 4–6 inches long, two- to eight-flowered. *Spikelets* scabrous, erect, alternate, 1¼–2¼ inches long, including the awns. *Glumes* unequal or nearly equal, often very small, sometimes half as long as the paleæ (without the awns), lanceolate, nerved. *Lower palea* smooth and nerveless below, keeled and scabrid above, produced into a long, rigid, slightly recurved awn twice or thrice as long as itself.

2. **Triticum pectinatum** (Br. Prodr. p. 179); culmis dense cæspitosis strictis erectis basi foliosis inferne vaginisque lævibus superne pubescenti-scaberulis, foliis ciliato-scabridis, spica brevi, rachi flexuosa, spiculis patentibus demum reflexis 3–6-floris, glumis ovato-lanceolatis acuminatis nervosis parce ciliatis flosculo ⅓ brevioribus, palea inferiore ciliata nervosa in aristam rigidam scabram palea breviorem angustata. —T. Brownii, *Kunth, Agrost.* 447. Festuca pectinata, *Lab. Fl. Nov. Holl.* i. *p.* 21. *t.* 25. Vulpia pectinata, *Nees, in Hook. Lond. Journ. Bot.* ii. 419. Agropyron pectinatum, *Beauv. Agrost.* 101. (*Gunn,* 999, 1474.)

HAB. Hampshire Hills and Recherche Bay, etc., *Gunn.*—(Fl. Nov.)

DISTRIB. Victoria.

A remarkable and very distinct Grass.—*Culms* densely tufted and branched at the very base, ½–1½ foot high, glabrous and smooth below; upper part pubescent and rough, as is the flexuose rachis of the spike. *Sheaths* of the leaves quite glabrous and smooth. *Leaves* all at the base of the culm, ciliated with rigid, spreading, white hairs. *Spike* 2–3 inches long, of eight to fourteen spikelets, which are erect when young, spread horizontally when in flower, and deflexed in fruit: each is ⅓ inch long. *Glumes* ovate-lanceolate, nerved, ciliated, acuminate, ⅓ shorter than the palea. *Florets* three to six, spreading, ciliated with long white hairs, rigid. *Lower palea* strongly nerved, narrowed into a rigid, scabrid, sharp awn.

3. **Triticum velutinum** (Nees); totum molliter pubescens v. velutinum, culmis cæspitosis basi foliosis, foliis brevibus, spica pauci-6–8-flora, spiculis subconfertis breviusculis erectis 8-floris, flosculis patulis scaberulis, glumis nervosis subæqualibus ovato-lanceolatis acuminatis paleis brevioribus, palea inferiore nervosa in aristam brevem subulatam angustata.—Agropyrum velutinum, *Nees, in Hook. Lond. Journ. Bot.* ii. 416. (*Gunn,* 770.)

HAB. Middlesex Plains and Surrey Hills, *Gunn.*—(Fl. Jan.)

DISTRIB. Alps of Victoria.

Very distinct from either of the former species.—*Culms* ¼–1½ foot high, strict, erect, stout, wholly covered, as are the leaves on both sides and their sheaths, with soft down. *Leaves* at the base of the culm short. *Spikes* short, 1½–2 inches long, of four to six broad, erect spikelets, which are rather crowded, and ½ inch broad. *Glumes* ovate-lanceolate, acuminated, shorter than the florets, which are about eight, and spreading. *Lower palea* nerved, scabrid, ending in a short, rigid, black awn.

CLASS ACOTYLEDONES.

NAT. ORD. I. FILICES.

Tasmania, as compared with the drier continent of Australia, is very rich in Ferns (including *Lycopodiaceæ*, etc.), but poor if compared with the New Zealand Islands, which have just twice as many Ferns, and not much more than half as many flowering plants, as Tasmania possesses. Tropical Australia contains about as many Ferns as Tasmania, almost all of them belonging to different species. New South Wales and Victoria (that is, South-eastern Australia) contain about as many as Tasmania, whilst South-west Australia presents scarcely a dozen species. The Tasmanian Ferns are almost unexceptionally identical with New Zealand ones, and many have a very wide range indeed.

Tribe I. GLEICHENIACEÆ, Br.—*Capsules 2–4, sessile, bursting longitudinally, completely surrounded by an oblique or transverse striated ring.*

Gen. I. GLEICHENIA, *Smith.*

Involucrum 0, v. e margine frondis revolutæ. *Capsulæ* in quovis soro 1–6, sessiles, annulo completo cinctæ, longitudinaliter dehiscentes.—Rhizoma *repens.*

A large genus, of coriaceous, rigid, opaque Ferns, chiefly natives of the tropics, Australia, and New Zealand. A few are found in Japan, Owhyhee, and temperate South America.—*Rhizome* creeping, often chaffy or woolly, as is the whole plant sometimes. *Stipes* erect, rigid, sometimes very small and slender. *Frond* dichotomously branched; divisions simple or pinnate. *Pinnæ* narrow, pinnatifid; the segments generally convex, sometimes with revolute margins, which form an involucre. *Sori* of one to six sessile capsules, that burst longitudinally, each surrounded by a complete ring, placed at the end or middle or axil of the simple or forked veinlets.—The microscopic characters of a naked sorus, consisting of very few capsules, and a complete ring surrounding the sessile capsule, which bursts from the base to the apex, are certain marks of this genus. (Name in honour of *K. W. F. von Gleichen*, a German author on microscopic plants.)

§ 1. EUGLEICHENIA.—*Sorus at the apex of a veinlet. Segments of the pinnæ broad, short.*

1. **Gleichenia microphylla** (Br. Prodr. 161); fronde dichotome ramosa, ramis divaricatis pinnatis, pinnis pinnatifidis glabris, lobis subrotundis ovatisve planis concavisve, marginibus non inflexis, capsulis 1–4 exsertis, rachibus stipiteque superne hirtis, pilis ferrugineis rachi sæpius stellatis.—*Hook. Sp. Fil.* i. *p.* 3. *t.* 2 *A.* G. semivestita, *Labill. Sert. Nov. Cal. p.* 8. *t.* 11. G. Speluncæ, *Guill. Ic. Plant. Rar. t.* 12. (*Gunn,* 13, 1500, 1502.)

HAB. Common in loose forest land, etc.: Georgetown, Macquarrie Harbour, etc.—(*v. v.*)

DISTRIB. New South Wales and Victoria, New Zealand, New Caledonia, Malay Islands. (Cultivated in England.)

Fronds 1½–3 feet high. *Stipes* terete, slender, generally smooth, often shining below, woolly or chaffy above. *Branches* dichotomous, spreading, a span to a foot long, forked and pinnate; *rachis* chaffy, and covered with scattered, stellate, rusty-red hairs. *Pinnæ* 1½–2 inches long, ⅛ inch broad, shining above, often glaucous below, there covered with long, weak, lax, deciduous hairs, or perfectly glabrous; *costa* often chaffy in the young state, smooth in the old. *Segments* broadly oblong or rounded, not cucullate as in the following species. *Capsules* one to four. —The *G. Speluncæ* figured in the 'Species Filicum,' from Tasmania (Gunn, 34), appears to be a young specimen of this species.

2. **Gleichenia dicarpa** (Br. Prodr. 171); fronde dichotome ramosa, ramis divaricatis pinnatis, pinnis pinnatifidis subtus densissime ferrugineo-lanatis squamosisque glabratis glaberrimisve, segmentis orbiculatis saccatis lato margine cinctis, capsulis binis, rachi costáque lanatis paleaceisque rarius glabratis.—*Hook. Sp. Fil.* i. *p.* 3. *t.* 1 *C; Fil. Exot. t.* 40; *Kunze, Farnkr. p.* 164. *t.* 70. *f.* 2. G. Vulcanica, *Blume, En. Fil. Jav.* 251. (*Gunn,* 1504.)

Var. *β. alpina;* minor, densius ferrugineo-lanata et paleacea.—G. alpina, *Br. et Hook. l. c.; Hook. et Grev. Ic. Fil. t.* 58. (*Gunn,* 1504, *in part.*)

Hab. Abundant, especially in subalpine districts; var. *β* ascending to 4000 feet.—(*v. v.*) (Cultivated in England.)

Distrib. Alps of Victoria, New Zealand, New Caledonia; lofty mountains of Java and Celebes, and Malacca.

This is a rather common Tasmanian plant, and varies extremely in the amount of woolly clothing it bears. Sometimes the whole plant, from the rhizome upwards, is covered with a soft brown wool and chaff (such is especially the case with alpine specimens); at other times the plant is nearly glabrous throughout, and the under surface of the lobes is glaucous. Tasmanian specimens attain nearly as large a size as *G. semivestita;* New Zealand ones are smaller, and more slender. The pinnæ are more slender than in *G. semivestita,* and the saccate lobes, which look like closed boxes with transverse slits, at once distinguish this specifically. I have in vain attempted to distinguish *G. alpina* as a species; it is certainly only an alpine, and consequently stunted, and often woolly state of *G. dicarpa:* I have not only gathered these varieties passing into one another, but Mr. Gunn's magnificent suites of specimens show every transition state. Some of my specimens of var. *β alpina,* from Mount Wellington, are as glabrous as any of *G. dicarpa.*

§ 2. Mertensia.—*Sorus at the middle or fork of a veinlet. Segments of the pinnæ linear.*

3. **Gleichenia flabellata** (Br. Prodr. 161); fronde submembranacea dichotome ramosa prolifera flabelliformi bipinnata, pinnulis ascendentibus linearibus acutis serrulatis utrinque concoloribus subtus glaberrimis pubescentibusve, capsulis 4–6 exsertis, costa rachi stipiteque nudis glaberrimis v. rarius pubescentibus.—*Hook. Sp. Fil.* i. *p.* 6; *Fil. Exot. t.* 71. (*Gunn,* 23.)

Var. *β. tenera;* submembranacea, pinnulis linearibus integerrimis.—G. tenera, *Br. Prodr.* 161. (*Gunn,* 1506.)

Hab. Damp shaded places, but not very common: Yorktown, *Gunn.*—(*v. v.*) Var. *β.* Calder's Pass, on the road from Lake St. Clair to Macquarrie Harbour.

Distrib. New South Wales and Victoria, New Zealand, New Caledonia. (Cultivated in England.)

A much larger plant than any of the former, 2–4 feet high, with larger, broader, more membranous and proliferous fronds, having several tiers of branches rising above one another.—*Pinnules* narrow, long, serrate, green on both sides. *Stipes, costa,* and *rachis* without bullate scales.—The *G. tenera,* Br., appears to me to be only a more membranous state.

Tribe II. Cyatheæ.—*Sorus globose. Capsules with an incomplete vertical ring, sessile or stalked, placed on an elevated receptacle, often mixed with jointed hairs.*

Gen. II. ALSOPHILA, *Br.*

Sori dorsales, globosi. *Receptaculum* prominulum. *Involucrum* 0. *Venæ* pinnatæ, liberæ, simplices v. furcatæ.—Caudex *sæpius arborescens.*

A very large genus of tropical Tree-Ferns, of which more than fifty species are enumerated, but few of them grow in the south temperate zone; of these one is an Australian plant, found also on the north coast of Tasmania;

another is the *A. excelsa* of Norfolk Island, which is the loftiest of Tree-Ferns, and said to attain 80 feet; and the third is a native of New Zealand. The genus is distinguished from *Polypodium* by the arborescent habit and elevated receptacle of the sorus, which has no involucre, and often bears long jointed hairs amongst the capsules. (Name from αλσος, *a grove*, and φιλω, *to love.*)

1. **Alsophila Australis** (Br. Prodr. 158); glabra, fronde bipinnata, pinnulis lineari-lanceolatis attenuato-acuminatis pinnatifidis subtus glaucis, segmentis oblique ovatis acutis integerrimis v. subserratis, soris 1–6.—*Hook. Sp. Fil.* i. 50. *t.* 19 *A.* (*Gunn,* 1507.)

HAB. Not rare; in shady forests: Macquarrie Harbour, *Backhouse;* Asbestos Hills and Georgetown, *Gunn.*

DISTRIB. New South Wales and Tasmania.

A very handsome Tree-Fern, attaining a height of 30 feet, conspicuously differing from *Dicksonia Antarctica* in the black trunk being covered with the persistent bases of the fallen fronds.—*Fronds* 12–14 feet long, bipinnate, somewhat glaucous beneath.

Gen. III. DICKSONIA, *L'Hérit.*

Sori marginales, globosi. *Receptaculum* prominulum. *Involucrum* bivalve; *verum* e apice venulæ ortum, extus liberum; *spurium* e lobulo pinnulæ reflexo, alterum equitans. *Venæ* simplices v. furcatæ.—Caudex *sæpius arborescens.*

A large genus of Ferns; many, like the Tasmanian *D. Antarctica,* are arborescent.—*Sori* on the margins of the pinnules. *Capsules* on an elevated receptacle, enclosed in a two-valved involucre. *Inner valve,* or true involucre, coriaceous, but less so than the outer, arising from the end of a vein; *outer,* the recurved segment or tooth of the pinnule, opposite the inner. (Named in honour of *Mr. James Dickson,* a Scotch botanist.)

1. **Dicksonia Antarctica** (Lab. Nov. Holl. ii. p. 100. t. 249); arborea, stipite rachique lævi, partialibus costisque molliter patentim pilosis demum glabratis, fronde coriacea bipinnata, pinnis lineari-elongatis longe acuminatis, pinnulis sessilibus profunde pinnatifidis linearibus acutis, segmentis brevibus pungentibus grosse argute serratis, soris quovis lobulo sub-4, involucri valvis æqualibus.—*Br. Prodr.* 157; *Hook. Sp. Fil.* i. 66; *Fl. N. Zeal.* ii. 9. D. fibrosa, *Colenso, in Tasm. Journ.; Hook. Sp. Fil.* i. *p.* 68. *t.* 23 *B.* (*Gunn,* 1508, 1509.)

HAB. Abundant in damp, especially subalpine forests.—(*v. v.*)

DISTRIB. New South Wales, Victoria, and New Zealand. (Cultivated in England.)

This beautiful Tree-Fern has the trunk 30–50 feet high, covered with matted rootlets, which increase its bulk considerably, causing it to attain a diameter of 4 feet.—*Stipes* smooth, pale, glabrous; partial rachis and midribs on both surfaces more or less clothed with soft spreading hairs, which are very deciduous. *Fronds* 6–12 feet long, lanceolate, narrowed downwards, bipinnate. *Pinnæ* 10 inches long, 1½ inch broad, narrowed into long tips. *Pinnules* sessile, ¾–1 inch long, linear or linear-oblong, acute, pinnatifid, the barren ones cut beyond the middle, the fertile to the base. *Segments* oblong, sharp, and sharply toothed. *Sori* about four on each segment; *valves* of the involucre hemispherical, equal.

2. **Dicksonia dubia** (Gaud. in Freyc. Voy. Bot. 367); rhizomate repente, fronde tripinnata, pinnis coriaceis lanceolatis profunde pinnatifidis, segmentis inciso-serratis inferioribus bipinnatifidis, subtus pilosis glabratisve, soris globosis, involucri valvula superiore e margine inflexo lobuli, inferiore parva membranacea lacera.—*Hook. Sp. Fil.* i. *p.* 71. *t.* 24 *C.* Davallia dubia, *Br. Prodr.* 157. Balantium Brownianum, *Presl, Pterid.* 134. *t.* 5. *f.* 4. (*Gunn,* 17.)

HAB. Tasmania, *Brown, Gunn* (no habitat).

DISTRIB. New South Wales.

A very different plant in habit from *D. Antarctica*, and appearing to belong to a different genus, but there are numerous intermediate species in various tropical countries.—*Fronds* 2–5 feet high, rather coriaceous, pale, arising from a stout, creeping rhizome, tripinnate. *Pinnæ* deeply divided; *pinnules* obliquely oblong-lanceolate, pinnatifid. *Sori* near the apices of the lobules; *upper valve* of the involucre formed of the coriaceous recurved lobule of the frond; *lower* small and membranous.

Tribe III. HYMENOPHYLLEÆ.—*Sorus at or beyond the edge of the frond. Capsules sessile, on a filiform or club-shaped, often elongated receptacle, girt with an oblique ring. Frond very delicate, transparent, and reticulated.*

Gen. IV. HYMENOPHYLLUM, *Sm.*

Sori marginales. *Capsulæ* receptaculo cylindraceo fronde immerso v. exserto subsessiles, depressæ, annulo completo transverse cinctæ, longitudinaliter ruptæ. *Involucrum* textura frondis, bivalve, urceolatum v. compressum; *valvis* planis v. convexis, extus liberis.—Frondes *membranaceæ, pellucidæ, cellulis magnis reticulatæ, costa valida percursæ.*

One of the largest and most beautiful genera of Ferns, generally of small size, easily recognized (except from *Trichomanes*) by the transparent pellucid texture of the delicate green, glistening fronds, which are beautifully reticulated when seen through the microscope.—*Rhizome* slender or stout, wiry, filiform, creeping. *Fronds* generally glabrous, often flaccid, pinnately or pinnatifidly divided into linear, blunt, dichotomously branched segments, through which runs a stout midrib. *Sori* at the axils or ends of the segments, sunk in the substance of the frond, which forms a cup-shaped or box-like, often flattened, two-valved involucre over them. Sometimes the involucre is produced beyond the frond, and stalked; its two valves or lips are entire or toothed, and open outwards. *Capsules* sessile, on a filiform or cylindrical receptacle, that is sometimes exserted, like a thread, beyond the involucre, sessile, depressed, surrounded with a complete ring, and bursting longitudinally. (Name from ὑμην, *a membrane*, and φυλλον, *a leaf.*)

§ A. *Fronds quite glabrous; margins toothed or serrate, not ciliate.*

1. **Hymenophyllum Tunbridgense** (Sm. Fl. Brit.), var. *β. cupressiforme;* fronde elongata erecta rigida, pinnis distantibus decurvis, segmentis angustissimis, involucris lobulo frondis quasi stipitatis liberis. —*Hook. Sp. Fil.* i. *p.* 95; *Fl. N. Zeal.* ii. 11; *Br. Prodr.* 159. H. cupressiforme, *Lab. Fl. Nov. Holl. p.* 102. *t.* 250. *f.* 2. H. revolutum, *Col. in Tasm. Phil. Journ.* (*Gunn,* 46, 1510.)

HAB. Abundant in shady places, on the ground, and on rotten trunks of trees.—(*v. v.*) (Cultivated in England.)

DISTRIB. Victoria, New Zealand, South Chili, Fuegia, and Brazil, South Africa.

The *H. Tunbridgense* is a scarce English Fern, and a great favourite with cultivators. The Tasmanian state of the species has a narrower and more decumbent frond, often remarkably curved downwards on to the ground, and narrower segments.—*Fronds* 2–4 inches high, ovate or linear, pinnate below, pinnatifid (rachis winged) above, quite glabrous. *Pinnæ* very narrow, distant, rigid; *segments* long or short, spreading or curved downwards, deeply and sharply toothed. *Involucre* orbicular, compressed at the axils of the segments, erect, projecting beyond the frond, in which their bases are sunk, their lips spinulose or irregularly toothed, rarely nearly entire. The ordinary state of *H. Tunbridgense*, with short, broad, oblong, flat, bright-green fronds, with broad, short pinnæ and segments, and involucres more sunk in the segments, is a different-looking Fern from its deep-green, sparingly branched var. *β*, and also from *H. unilaterale*, but these characters vary in whatever parts of the world they both inhabit, and the *β. cupressiforme* seems all but intermediate.

2. **Hymenophyllum unilaterale** (Willd. Sp. Pl. v. p. 521); frondibus cæspitosis lineari-oblongis

pinnatis erectis decurvisve, pinnis distantibus decurvis margine superiore præcipue parce pinnatifidis, segmentis linearibus argute dentatis simplicibus pinnatifidisve, involucris supra-axillaribus liberis obovato-oblongis tumidis, valvis integerrimis, rachi superne alata.—*Fl. N. Zeal.* ii. 11. H. Wilsoni, *Hook. Brit. Fl. ed.* i. *p.* 450; *Sp. Fil.* i. *p.* 95; *Wils. in Engl. Bot. Suppl. t.* 2686. H. Tunbridgense, *β, Kunze, Plant. Afr. Aust.* 7. (*Gunn,* 1511.)

HAB. Common, especially on trunks of trees, in damp forests.—(*v. v.*)

DISTRIB. New South Wales, Victoria, New Zealand, Chili, Fuegia, South Africa, Great Britain.

This differs from *H. Tunbridgense, β. cupressiforme,* only in the entire lips of the involucre, otherwise these plants appear identical. I find the amount of toothing in the valves of *H. Tunbridgense, β,* to vary extremely, sometimes amounting to a mere erosion, and at others the lips being even laciniated and spinulose, so that I can hardly doubt these two proving eventually the same species.

§ B. *Fronds quite glabrous, or with the costa and rachis only setose; margins neither toothed nor ciliated.*

a. *Fronds pinnatifid, rarely pinnate below; rachis, and generally the stipes, winged.*

3. **Hymenophyllum rarum** (Br. Prodr. 159); fronde pendula tenera oblongo-ovata v. lineari-elongata glaberrima bipinnatifida v. basi pinnata, segmentis brevibus planis latis integerrimis, involucris late ovatis rhombeisve terminalibus fronde immersis compressis, valvis latis brevibus integerrimis, stipite rachique capillari.—*Hook. Sp. Fil.* i. *p.* 101; *Fl. N. Zeal.* i. 121. H. semibivalve, *Hook. et Grev. Ic. Fil. t.* 83. H. fumarioides, *Bory, in Willd. Sp. Pl.* v. 526. H. imbricatum, *Col. in Tasm. Phil. Journ.* (*Gunn,* 47, 1512.)

HAB. Abundant in damp forests, often clothing trunks of *Dicksonia Antarctica.*—(*v. v.*)

DISTRIB. New Zealand, South Chili and Fuegia, South Africa, Ceylon.

A very beautiful Fern, varying extremely in size and habit wherever found. It clothes trunks of Tree-Ferns with a glistening garment of the most delicate and beautiful green, the fronds hanging down and overlapping one another in profusion. It may be readily recognized by its hair-like stipes and rachis, transparent membranous fronds, and broad, short, terminal involucres.—*Fronds* 1–8 inches long, broad or narrow, linear, bipinnatifid. *Pinnæ* short, often very irregular and unequal, distant, or close and overlapping one another. *Segments* short, broad. *Involucres* rhomboid, wholly sunk in the ends of the segments, very flat, with short, broad, entire lips.

4. **Hymenophyllum crispatum** (Wall. Cat. 169); erectum, fronde ovata v. lineari-ovata bi-tripinnatifida, segmentis linearibus planis undulatisve, involucris terminalibus liberis sessilibus ovatis turgidis ad basin partitis, valvis integerrimis erosisve, rachi stipiteque late alatis, ala plana undulata v. crispata.—*Hook. et Grev. Ic. Fil. t.* 77; *Hook. Sp. Fil.* i. *p.* 105. H. flabellatum, *Br. Prodr.* 159, *non Lab.* H. atrovirens, *Col. in Tasm. Phil. Journ.* H. flexuosum, *A. Cunn. Prodr. Fl. N. Zeal.; Hook. Sp. Fil. l. c. Ic. Pl. t.* 962. (*Gunn,* 1513.)

HAB. Damp woods, abundant on stones and trunks of trees, etc.—(*v. v.*)

DISTRIB. Victoria, New Zealand, Malay Islands, Ceylon, Himalaya Mountains.

Fronds 2–8 inches high, erect, lurid green, bi-tripinnatifid. *Segments* linear, $\frac{1}{10}$ inch broad, flat, undulated or crisped. *Involucres* often very numerous, terminal, ovate, turgid, broader than the segments of the frond, deeply divided into two valves, whose lips are quite entire or erose. *Stipes* and *rachis* with a broad, flat or crisped wing. *Rhizome* quite glabrous, creeping.

b. *Frond pinnate below. Rachis not winged below.*

5. **Hymenophyllum flabellatum** (Lab. Fl. Nov. Holl. ii. p. 101. t. 250. f. 1, non Br. Prodr.); glaberrimum, nitens, fronde pendula v. decurva lineari-oblonga rarius ovata, pinnis plerumque basi cuneatis late ovatis flabellatim dilatatis pinnatifidis v. bipinnatifidis, segmentis linearibus furcatis brevibus caudato-elongatisve, involucris segmenta lateralia terminantibus orbicularibus oblongisve ad basin fere bivalvibus,

rachi superne alata inferne nuda, stipite glaberrimo ima basi parce lanato.—*Hook. Sp. Fil.* i. *p.* 111. H. nitens, *Br. Prodr.* 159; *Fl. N. Zeal.* ii. 151; *Hook. et Grev. Ic. Fil. t.* 197. (*Gunn,* 19, 1514.)

HAB. Damp forests, abundant, especially on Tree-Ferns.—(*v. v.*)

DISTRIB. Victoria, New Zealand.

A very beautiful small species, often clothing the trunks of Tree-Ferns with its pale-green, glistening fronds. —*Rhizome* rigid, wiry. *Stipes* 2–4 inches long, wiry, glabrous, except at the very base, where there is a tuft of soft, pale-brown, woolly hairs. *Fronds* broadly ovate when erect, linear or oblong when pendulous, 2–6 inches long, pinnate below, pinnatifid above, perfectly smooth, transparent. *Pinnæ* twice pinnatifid; *segments* linear, quite entire and smooth, generally broadly cuneate at the base. *Involucres* small, terminal on lateral segments, orbicular or oblong, the valves entire or toothed.

OBS. I know nothing of *H. australe,* Willd. Sp. Pl. v. 527 (said to be found in Tasmania by Labillardière), except it be the *H. rarum,* as conjectured in the 'Species Filicum,' p. 108.

Gen. V. TRICHOMANES, *Sm.*

Sori marginales. *Involucrum* tubulosum, textura frondis, basi attenuatum, apice dilatatum v. bivalve. *Capsulæ* receptaculo filiformi sæpius exserto sessiles, depressæ, annulo completo transversali cinctæ, longitudinaliter ruptæ.—Frondes *plerumque membranaceæ, pellucidæ, cellulis magnis reticulatæ.*

A more tropical genus than *Hymenophyllum,* to which alone it is very closely allied, and from which it differs in the tubular or trumpet-shaped involucre, which is less obviously two-lipped, often quite circular at the mouth, and having a generally exserted, filiform receptacle. (Name, an ancient one of uncertain application.)

1. **Trichomanes venosum** (Br. Prodr. 159); rhizomate repente filiformi, fronde parvula pendula nitida membranacea pinnata, pinnis remotis late lineari-oblongis ligulatisve simplicibus v. basi furcatis obtusis v. emarginatis margine non incrassato repandis, costa flexuosa, venis furcatis, involucris ad basin pinnarum fronde immersis liberisve tubuloso-urceolatis, ore dilatato breviter bilabiato, receptaculo plerumque capillari, rachi apice alata inferne stipiteque capillari.—*Hook. et Grev. Ic. Fil. t.* 78; *Hook. Sp. Fil.* i. *p.* 132; *Fl. N. Zeal.* ii. 17. (*Gunn,* 1515.)

HAB. Abundant, clothing the trunks of Tree-Ferns.—(*v. v.*)

DISTRIB. New South Wales, Victoria, New Zealand.

An extremely delicate and beautiful Fern, often clothing Tree-Ferns, as *Hymenophyllum flabellatum* and *H. rarum* do.—*Rhizome* creeping, and *stipes* capillary. *Fronds* 2–5 inches long, linear, pinnate, membranous. *Pinnæ* distant, linear-oblong or strap-shaped, cuneate at the base, not margined, blunt or emarginate, waved along the edge, simple or divided at the base, $\frac{1}{2}$–$1\frac{1}{2}$ inch long, $\frac{1}{10}$–$\frac{1}{8}$ inch broad; *costa* flexuose, giving off branching veins. *Involucres* on the upper edge of the pinna at its base, sunk in the frond or in a lateral segment. *Receptacle* included, or capillary and exserted. The upper pinnæ are often of irregular length, sometimes very long and caudate.

Tribe IV. POLYPODIEÆ.—*Sorus near the margin of the frond or dorsal, rounded or linear. Capsules not placed on an elevated receptacle, stalked, partly girt with a vertical ring, bursting transversely on the side where the ring is wanting.*

Sub-tribe A.—*Sorus covered with an involucre (indusium), or with the more or less altered margin of the frond.*

Gen. VI. CYSTOPTERIS, *Bernh.*

Sori globosi, dorsales. *Involucrum* superficiale, membranaceum, cucullatum, basi inflata infra sorum

insertum, medio venæ impositum. *Venæ* furcatæ, simplices.—Rhizoma *cæspitosum v. repens;* frondibus *flaccidis, membranaceis, bi-tripinnatifidis.*

A small genus of Ferns, natives chiefly of temperate and subarctic regions, of remarkably flaccid texture. *C. fragilis* is found in very many parts of the globe, and is a very variable plant.—*Frond* 3–6 inches high, lanceolate or oblong-lanceolate, pinnate or bipinnate. *Rhizome* shortly creeping, tufted. *Stipes* short, slender, brittle; *rachis* winged above. *Pinnæ* irregularly inciso-lobate; upper decurrent. *Sori* scattered over the back of the pinnules, small, sometimes confluent. *Involucre* white, membranous, attached below the sorus by a broad, convex, arching base, ovate, acuminate, at length reflexed. (Name from κυστος, *a box*, and πτερον, *a wing.*)

1. **Cystopteris fragilis** (Bernhardi, Neu. Journ. Bot. ii. 27).

Var. *a. dentata;* frondibus bipinnatis, pinnis ovatis lanceolatisve, pinnulis obtusis rarius pinnatifidis. —*Hook. Gen. et Sp. Fil.* i. 198. C. dentata, *Hook. Brit. Fl. ed.* 5. *p.* 441. (*Gunn*, 2039.)

Var. *β. Tasmanica;* frondibus pinnatis, stipite brevi, pinnis late ovatis inciso-lobatis inferioribus pinnatifidis, soris paucis minutis.—C. Tasmanica, *Hook. Gen. et Sp. Fil.* i. 199. (*Gunn*, 32.) (Tab. CLXVI.)

Hab. Var. *a.* Mount Olympus and Lake St. Clair, on moist rocks, *Gunn.* Var. *β.* Tasmania, *Gunn* (no habitat).

Distrib. Var. *a.* Europe, Arctic regions, North India, Abyssinia, North America, South Africa.

Of the two varieties one accords precisely with the European *dentata;* the other differs in its less-divided frond, broader pinnules, and very small sori.—Plate CLXVI. Fig. 1, portion of frond and sorus; 2, involucre:—*both magnified.*

Gen. VII. LINDSÆA, *Dry.*

Sori lineares, marginales v. intra-marginales, continui v. interrupti. *Involucrum* exterius liberum, e membranis 2 parallelis, superiore textura frondis, inferiore ex apicibus venarum (unæ v. plurim.) oriente. *Venæ* simplices v. anastomosantes.—Frondes (*speciebus Tasmanicis*) *parvulæ, coriaceæ, pinnatæ.*

A large genus of chiefly tropical Ferns, the Tasmanian species of which are small, coriaceous, and glabrous, and simply pinnate or bipinnate, with erect, stipitate, tufted fronds, rising from a creeping rhizome.—*Sori* linear, running along the edge of the pinnules continuously or interruptedly, covered by an involucre formed of two parallel lamellæ or plates opening outwards; of these the upper is coriaceous, and formed of the frond, the lower membranous, and rising from the ends of one or more veins. (Named in honour of *Mr. John Lindsay*, author of 'Observations on the Germination of Ferns.')

1. **Lindsæa linearis** (Sw. Fil. t. 3. f. 3); frondibus e rhizomate crasso subdistantibus linearibus pinnatis, pinnis sessilibus late cuneato-flabelliformibus marginibus demum revolutis integris crenatisve, soris continuis, stipite rachique nitido.—*Br. Prodr.* 156; *Kunze in Schk. Suppl. p.* 30. *t.* 16; *Hook. Sp. Fil.* i. *p.* 206; *Fl. N. Zeal.* ii. 19. (*Gunn*, 20, 1535.)

Hab. Abundant in heathy places.—(*v. v.*) (Cultivated in England.)

Distrib. Extratropical Australia, New Zealand.

A very common Fern, easily recognized by its stout, creeping, scaly rhizome; erect, linear, simple, pinnate fronds, 2–18 inches high; and broadly cuneate pinnules, which are spread out like a fan, and have entire or crenate anterior margins; the latter become revolute when dry.—*Pinnæ* ¼ inch broad, distant; *sori* nearly continuous along their outer edge. *Stipes* and *rachis* stout, purplish-brown, shining.

2. **Lindsæa trichomanoides** (Dryand. in Linn. Soc. Trans. iii. p. 43. t. 11); rhizomate repente paleaceo, frondibus subcæspitosis late lanceolatis pinnatis bipinnatisve, pinnis primariis basi cuneatis stipi-

tatisve oblongo-lanceolatis lineari-lanceolatisve pinnatifidis pinnatisve lobatis rarius integris, pinnulis obovato-cuneatis breviter stipitatis decurrentibusve, margine anteriore rotundato simplici v. lobato, soris continuis.—*Hook. Sp. Fil.* i. 218. L. viridis, *Col. in Tasm. Phil. Journ.* ii. 174.

Var. *β. Lessoni;* fronde pinnata v. basi bipinnata, pinnis oblongo-lanceolatis obtusis integris lobatis pinnatifidisve.—L. Lessoni, *Bory, in Duperrey Voy. p.* 278. *t.* 37. *f.* 2; *Hook. Sp. Fil.* i. *p.* 217; *Fl. N. Zeal.* ii. 19. (*Gunn*, 2057.)

Hab. Dense forests near Macquarrie Harbour, *Milligan, Gunn.*—(*v. v.*)

Distrib. New Zealand.

An extremely variable little Fern.—*Rhizome* creeping, scaly, and having pilose roots. *Fronds* pinnate or bi- rarely tri-pinnate, numerous, ovate or linear-oblong, rather tufted, erect, 2–18 inches high. *Stipes* scaly at the base, and *rachis* slender, stiff, trigonous, polished. *Pinnæ* rather distant; in var. *Lessoni* simple, oblong-lanceolate, with a cuneate base, blunt, lobed, bearing sori on the lobes, more often pinnatifid, with cuneate lobes, very frequently bi- and even tri-pinnate. *Pinnules* always broadly cuneate, rounded in front, with a deep, continuous, intramarginal sorus. The pinnules vary from $\frac{1}{4}$–$\frac{3}{4}$ inch long; the larger are lobed, and bear a sorus on each lobe.

Gen. VIII. ADIANTUM, *L.*

Sori marginales, punctiformes v. elongati. *Involucrum* soris conforme, e margine frondis reflexo, disco venoso capsulifero, limbo membranaceo libero.

Beautiful terrestrial Ferns, natives chiefly of the tropics, but of which one species is found in Europe, and several occur in Australia, Tasmania, and New Zealand.—*Rhizome* creeping. *Stipes* generally black, often polished. *Fronds* bi-tripinnate in the Tasmanian species, with stipitate, broadly cuneate pinnules. *Sori* marginal, short, or linear and continuous. *Involucre* formed of the reflexed, often kidney-shaped edge of the frond, opening inwards, its surface veined, the veins continuous with those of the pinnules. (Name from αδιαντος, in allusion to the *dry* texture of the fronds.)

1. **Adiantum Æthiopicum** (Linn. Sp. Pl. 1560); fronde tenera flaccida oblongo-ovata tri-quadripinnata, pinnulis membranaceis glaberrimis stipitatis orbiculatis basi late cuneatis margine superiore lobato, soris 2–6 sinubus pinnulæ, involucris majusculis oblongo-lunulatis reniformibusve, stipite rachique gracili glaberrima nitida rufa v. ebenea.—*Hook. Sp. Fil.* ii. *p.* 37. *t.* 77 *A.*; *Fl. N. Zeal.* ii. 21. A. assimile, *Sw. Syn. Fil. pp.* 125 *et* 322. *t.* 3. *f.* 4; *Br. Prodr.* 155; *Hook. l. c.* A. trigonum, *Lab. Fl. Nov. Holl.* ii. *p.* 99. *t.* 248. *f.* 2. (*Gunn*, 16, 52, 1540.)

Hab. Pasture-land, behind rocks and logs of wood; also in rocky places, frequent.—(*v. v.*)

Distrib. Throughout Australia, New Zealand, and many tropical countries. (Cultivated in England.)

A. assimile was regarded as a distinct species from *A. Æthiopicum*, till the author of the 'Species Filicum' pointed out its identity with that plant. It is found in all tropical countries, and throughout the south temperate hemisphere, but is hardly known in the north temperate.—Everywhere perfectly glabrous, flaccid, membranous, pale-green or yellowish. *Stipites* tufted, slender, 4–10 inches long. *Frond* oblong, often elongated, tri-quadripinnate; *primary branches* alternate, distant. *Pinnules* $\frac{1}{4}$–$\frac{1}{3}$ inch broad, broadly cuneate, stipitate; upper margin rounded, deeply lobed. *Sori* few. *Involucres* very large, pale, kidney-shaped, placed in notches of the pinnules. *Rachis* slender, flexuose; partial ones and stalks of the pinnules capillary.

Gen. IX. HYPOLEPIS, *Bernh.*

Sori punctiformes, marginales, distincti. *Involucrum* e apice venulæ ortum, lobulæ frondis recurvæ formatum, coriaceum v. submembranaceum.

It is difficult to distinguish this genus by technical characters of the fructification from *Adiantum*, from which it is widely different in habit and general appearance. The sori are small, placed on the margins of the pinnules, in a sinus, and are covered with a small reflexed lobe of the frond, which is never so membranous as in *Adiantum*, but is green and herbaceous. *Sometimes* the reflexion of the pinnule's margin is so slight that the sorus is really naked, and then I cannot distinguish the genus from *Polypodium*, or the species *H. tenuifolia* from *P. rugulosum*, Lab. (Name from *ὑπο*, *beneath*, and *λεπις*, *a scale.*)

1. **Hypolepis tenuifolia** (Bernh. in Schrad. Journ. i. 34); fronde ampla glanduloso-pilosa v. glabrata submembranacea quadripinnata, pinnis primariis ovatis v. ovato-oblongis acuminatis secundariis tertiariisque lanceolatis, pinnulis sessilibus lineari-oblongis obtusis lobatis pinnatifidis inferioribus soriferis, lobis oblongis obtusis crenato-dentatis subintegerrimisve basin versus soriferis, involucro reniformi, costa rachibusque glanduloso-pilosis, stipite brunneo puberulo et scaberulo, rhizomate valido longe repente squamoso.—*Presl, Tent. Pterid. t.* 6. *f.* 29; *Hook. Sp. Fil.* ii. *p.* 60. *t.* 19 *A.*; *Fl. N. Zeal.* ii. 22. C. pellucida, *Colenso, Tasm. Phil. Journ.* Lonchitis tenuifolia, *Forst. Prodr.* C. Dicksonioides, *Endl. Prodr. Flor. Ins. Norf.*; *Kunze, Farnk. p.* 13. *t.* 8.

HAB. Not uncommon in forests, etc.—(*v. v.*)

DISTRIB. Australia, New Zealand, and various south temperate and tropical regions of the Old and New Worlds. (Cultivated in England.)

A tall, handsome, spreading Fern, 2–5 feet high. It varies a good deal in the colour, hairiness, and membranous or coriaceous consistence of the fronds, as they grow in more shaded or open localities.—*Frond* sometimes 2 feet broad, deltoid, tri-quadripinnate; *primary pinnæ* or *branches* spreading; *secondary* and *tertiary* narrow, oblong, acuminate; *ultimate*, or *pinnules*, sessile, linear-oblong, 1½–2 inches long, deeply pinnatifid. *Lobes* linear-oblong, blunt, bluntly crenate. *Sori* generally two or three on each side of the lobe, covered by an involucre formed of a portion of the recurved margin of each crenature. *Costa* hairy; *rachis* yellow-brown, glandular and hairy. *Stipes* stout, often viscid, glandular, hairy, and rough.—There is a New Zealand variety of this species with nearly glabrous rachis and stipes, more distant and acuminate secondary and tertiary pinnæ, narrower pinnules, which are deeper lobed, and bear more numerous sori, scarcely covered by the involucre, and which hence passes into *Polypodium rugulosum*, Lab.

Gen. X. CHEILANTHES, *Sw.*

Sori punctiformes, marginales, distincti. *Involucra* ut in *Hypolepide*, sed plerumque confluentia.

Though the Tasmanian species of *Cheilanthes* does not at all resemble *Hypolepis*, it is not readily characterized, except by having confluent involucres; *i. e.* instead of solitary isolated teeth or lobes of the pinnules being reflexed over the sori, longer portions of the margin of the frond are so, to a greater or less degree, forming a continuous involucre. (Name from *χειλος*, *a lip*, and *ανθος*, *a flower*; from the form of the involucre.)

1. **Cheilanthes tenuifolia** (Sw. Syn. Fil. 129 et 332); rhizomate crasso repente squamoso, frondibus cæspitosis erectis glaberrimis coriaceis lineari-ovatis deltoideisve tripinnatis contractis, pinnis primariis erectis distantibus, pinnulis parvis sparsis lineari-oblongis ovatisve lobatis pinnatifidisve, lobulis obtusis obtuse crenatis omnibus soriferis, soris continuis, stipite rachibusque validis brunneis nitidis glaberrimis v. stipite basi piloso.—*Schkuhr, t.* 125; *Br. Prodr.* 155; *Hook. Sp. Fil.* ii. *p.* 82. *t.* 87. *f.* 3; *Fl. N. Zeal.* ii. 23. C. Sieberi, *Kunze, Hook. l. c. t.* 97 *B.* C. Preissiana, *Kunze, in Plant. Preiss.* ii. 112; *Hook. l. c.* (*Gunn*, 15.)

HAB. Abundant, especially in stony places.—(*v. v.*)

DISTRIB. Australia, New Zealand, Malay Islands, China, India.

The true *C. tenuifolia* is a very widely diffused tropical Fern, of which Australian and New Zealand plants are smaller, and have often a more contracted frond than the Indian, and have hence been made into another species (*C. Sieberi*). The immense suite of specimens preserved in the Hookerian Herbarium, however, shows that all are one and the same plant, from which the *C. Preissiana* of the Swan River has been distinguished by the presence of a few hairs towards the base of the stipes, a character I find present and absent in different fronds of the same specimen.—*Rhizome* very stout, thickly covered with silky, long scales. *Stipes* tufted, stout, glossy, red-brown, quite glabrous, or with a few spreading hairs towards the base. *Fronds* 3 inches to a span or a foot long, narrow-ovate or oblong, rarely deltoid, much contracted from the erect pinnæ, tripinnate. *Pinnæ* distant; secondary scattered. *Pinnules* perfectly glabrous, few and small, coriaceous, 3–5 lines long, yellow-green, linear-oblong, blunt, crenate, their margins very revolute, lobed or pinnatifid; margins of all the lobes reflexed, forming a continuous, coriaceous, crenate involucre, with membranous edges. *Capsules* very numerous and prominent, often covering the pinnules. *Rachis* red-brown, shining, quite smooth.—This is anything but a handsome Fern in colour, form, or texture, always looking starved and dry, the small, narrow, scattered pinnules, with revolute margins, bearing a small proportion in size to the stout stipes and rachis. The pinnules often appear as a mass of fructification. In some specimens the primary pinnæ are reduced to small crumpled lobes, not half an inch long.

Gen. XI. PTERIS, *Br.*

Sori lineares, marginales, continui; capsulis sinu involucri insertis. *Involucrum* marginale, continuum, scariosum, intus liberum.

One of the largest and most extensively distributed groups of Ferns, which has been divided (on so many and various grounds) into so many genera, that, were they adopted here, one might perhaps be found for each Tasmanian species. Such dismemberments of genera, though extremely useful to the skilled botanist when working upon a multitude of species from all parts of the world, are, when not absolutely necessary, highly inconvenient for local Floras, rendering these impracticable to the student. I have therefore, in this case, adopted the old genus, as defined in Brown's 'Prodromus Floræ Australis,' and introduced as sections those of the new that are natural. *Pteris*, thus characterized, contains all those Ferns whose sori run continuously, or nearly so, along the edge of the whole pinnule, and are covered with a continuous, scarious or membranous involucre, formed of the incurved edge of the frond. It is distinguished from *Cheilanthes* only by the greater continuity and regular outline of the membranous involucre. (Name from πτερυξ, *a plume.*)

§ 1. Platyloma, J. Sm.—*Frond pinnate (in the Tasmanian species); veins forked, free.*

1. **Pteris falcata** (Br. Prodr. 154); frondibus rigidis erectis linearibus pinnatis, pinnis lineari-oblongis lanceolatisve acutis mucronatisve falcatis glabris basi obliquis obtusis nunc margine superiore basi auriculato, stipite rachique squamatis.—P. seticaulis, *Hook. Ic. Plant. t.* 207; *Fl. N. Zeal.* ii. 24. Pellæa falcata, *Fée, Gen. Fil.* 129; *Hook. Sp. Fil.* 135. (*Gunn,* 8.)

Hab. Common in forests, etc.—(*v. v.*)

Distrib. New South Wales, Victoria, New Zealand, Penang, Malacca, and the peninsula of India. (Cultivated in England.)

Fronds erect, coriaceous, rigid, tufted, 1–3 feet high, narrow-linear, pinnate. *Pinnæ* quite glabrous, linear-lanceolate or oblong, ⅔–1⅓ inch long (in Australian specimens 2½ inches), shortly stipitate, falcate, acute or mucronate, oblique at the base, which is very broadly cuneate; the upper margin sometimes produced into a lobe, or gibbous. *Sori* broad, continuous all round the pinnule, partially covered with a very narrow involucre. *Rachis* stout, densely villous, and covered with spreading, scaly hairs. *Stipes* black, hispid.

§ 2. Pteris, L.—*Fronds bi-tripinnate. Veins forked, free, united at their ends by the continuous receptacle.*

2. **Pteris aquilina** (L.), var. *esculenta;* fronde rigida coriacea tripinnata glabra v. subtus parce

pubescente v. pilosa, pinnulis anguste linearibus ultimis sæpius longe caudatis decurrenti-coadunatis, costa crassa, rachibus stipiteque validis glabris.—*Fl. N. Zeal.* ii. 25; *Hook. Sp. Fil.* ii. 197. P. esculenta, *Forst. Prodr.* 794; *Plant. Esc. t.* 74; *Swartz, Syn. Fil.* 101, 296; *Lab. Fl. Nov. Holl.* ii. *p.* 95. *t.* 244; *Br. Prodr.* 154. (*Gunn*, 5.)

HAB. Var. *esculenta* abundant throughout the Island.—(*v. v.*)

DISTRIB. Australia, New Zealand, Pacific Islands, Malay Islands, India, South America.

One of the most common Tasmanian Ferns, of which the roots roasted were formerly an article of food with the natives. The same variety grows in Australia, New Zealand, and the Pacific Islands, and differs very slightly from the *P. aquilina* of the north temperate zone, which is found in one form or another in all parts of the world.—*Rhizome* subterranean, creeping, often as thick as two fingers. *Stipes* sometimes 10 feet high, grooved on one side, stout, pale-yellow, shining, glabrous. *Frond* 2–4 feet long, broadly deltoid, tri-quadripinnate, of a very hard, rigid, coriaceous texture, glossy above. *Pinnules* linear, decurrent, and united with one another by forming a wing to the rachis, often hairy below. *Sori* continuous, frequently surrounding the pinnules, and even continued along their decurrent bases to those of the pinnule below them. *Involucres* very coriaceous. *Midrib* very thick, often grooved and hairy.

3. **Pteris tremula** (Br. Prodr. 154); fronde elata glaberrima submembranacea bi-quadripinnata, pinnis primariis ascendentibus, pinnulis linearibus adnatis decurrentibus subacutis sterilibus rarius integerrimis crenato-dentatis fertilibus plerumque integris, venis furcatis omnibus liberis, rachi stipiteque glaberrimis.—*Fl. N. Zeal.* ii. 25; *Hook. Sp. Fil.* ii. 174. *t.* 120 *B.* (*Gunn*, 41, 1537, 1538.)

HAB. Common in shaded places, forests, etc.—(*v. v.*)

DISTRIB. New South Wales and Victoria, New Zealand, Chili, and Juan Fernandez. (Cultivated in England.)

This is a very common Tasmanian plant, which so closely resembles *P. arguta* of the south of Europe, the Atlantic Islands, Abyssinia, Africa, and the East Indies, that I think it possible that it may prove to belong to that widely-diffused species. Extremely variable in size, from 1–5 feet, in consistency from membranous to coriaceous, in colour from pale light-green to olive-green, in amount of the division from bi- to quadri-pinnate, or almost decompound, and in breadth and length of the pinnules, which are quite entire or crenate. Its general characters are those of a perfectly glabrous, tripinnate frond, rather membranous, broadly deltoid, with ascending branches; the pinnules 1–2 inches long and ¼ broad, linear, blunt, adnate, decurrent, crenate, with forked, free veins, and a glabrous, shining costa and rachis: specimens in which all the pinnules are soriferous have these much narrower, more coriaceous, with the involucres sometimes reaching to the costa.

§ 3. LITOBROCHIA.—*Veins more or less anastomosing.*

4. **Pteris incisa** (Thunb. Fl. Cap. 733); fronde glaberrima elata ampla bi-tripinnata subtus glaucescente membranacea, pinnis primariis ovato-lanceolatis, secundariis lineari-lanceolatis acutis sæpius sessilibus rachive adnatis, pinnulis late oblongis oblongo-lanceolatisve rarius lanceolatis obtusis integerrimis v. obtuse lobatis crenatis pinnatifidisve, venulis furcatis basi plerumque anastomosantibus, costa flexuosa, rachi stipiteque glaberrimis pallidis nitidis antice sulcatis.—*Sw. Syn. Fil.* 99; *Hook. Sp. Fil.* ii. 230. P. Vespertilionis, *Lab. Fl. Nov. Holl.* ii. *p.* 96. *t.* 245; *Br. Prodr.* 154; *Fl. Antarct.* i. 110; *Fl. N. Zeal.* ii. 276. P. Brunoniana, *Endl. Prodr. Fl. Ins. Norf.* P. montana, *Colenso, in Tasm. Phil. Journ.* (*Gunn*, 18, 1536.)

HAB. Common in damp woods, and ascending to 3000 feet.—(*v. v.*) (Cultivated in England.)

DISTRIB. Extratropical Australia, New Zealand, India, South Africa, temperate and tropical South America.

Fronds perfectly glabrous, tall (2–4 feet), ample, broadly deltoid, membranous, glaucous below, bi-tripinnate:

small specimens are sometimes simply pinnate. *Primary pinnæ* ovate-lanceolate; *secondary* linear, sometimes pinnatifid; *pinnules* broadly oblong or rounded, quite entire, adnate and decurrent, rarely linear; *costa* flexuose; *veins* forked, often joining at the base in the lower pinnules. *Stipes* and *rachis* very pale-yellowish or brown, channelled in front, shining, often glaucous.

5. **Pteris Endlicheriana** (Agardh, Recens. Gen. Pterid. p. 66); fronde ampla membranacea flaccida bi-tripinnata glaberrima v. subtus sparse puberula, pinnis primariis ovato-lanceolatis acuminatis, secundariis lanceolatis lineari-lanceolatisve pinnatifidis, segmentis oblongisve subacutis crenato-dentatis pinnatisve, pinnulis sessilibus stipitatisve plerumque basi adnata decurrentibus lineari-oblongis linearibusve serratis lobatis pinnatifidisve, lobis serratis, venis furcatis anastomosantibus, rachibus stipiteque glabris.—*Hook. Ic. Plant. t.* 973; *Gen. et Sp. Fil.* ii. 218; *Gen. Fil. t.* 65 *B.* P. comans, *Endl. Prodr. Fl. Ins. Norf. p.* 13, *non Forst.; Fl. N. Zeal.* ii. 26.

Hab. Tasmania, *Gunn;* no localities attached, but it probably inhabits damp, shaded ravines, in the forests.—(*v. v.*)

Distrib. New Zealand, Norfolk Island, Juan Fernandez, Pacific Islands.

This species approaches so closely to *P. comans*, Forst., that in the New Zealand Flora I united it with that plant; but the pinnæ are always shorter and less acuminate.—A very similar plant to *P. tremula*, but with broader fronds and pinnules, which are very variable in size; it is best known from that plant by the veins being always connected by branches near the costa. In some New Zealand specimens the frond appears pinnate, or bipinnate at most; the pinnæ pinnatifid, with very broad segments, 1½ inch long, and nearly ½ inch broad, acute and serrated at the tips only; in these the veins branch and anastomose repeatedly.

Gen. XII. LOMARIA, *Willd.*

Sori frondibus distinctis, lineares, continui; *capsulis* demum superficiem totam pinnulæ contractæ operientibus. *Involucrum* marginale, scariosum, continuum, intus liberum v. dehiscens.—Frondes *coriaceæ, cæspitosæ, fertiles sæpissime sterilibus distinctæ.*

A large tropical and south temperate genus of Ferns.—*Fronds* tufted, usually pinnatifid or simply pinnate, the central ones in the tufts bearing fructification, the outer barren, with broader pinnæ; sometimes one side only, or only a few pinnæ of the frond are fertile. *Sori* as in *Pteris*, but generally occupying the whole under surface of the pinnule. *Involucre* marginal, scarious, continuous, often reaching the costa. (Name from λωμα, *a fringe;* in allusion to the scarious indusium.)

§ a. *Sterile frond usually simple.*

1. **Lomaria Patersoni** (Spr. Syst. Veg. iv. 62); frondibus simplicibus indivisis v. pinnatifidis pedalibus suberectis, sterilibus lanceolatis crenato-dentatis acuminatis, fertilibus anguste lineari-elongatis, stipite basi paleaceo.—*Kunze in Schkuhr Fil. Suppl. p.* 69. *t.* 34; *Hook. Fil. Exot. t.* 49. Stegania Patersoni, *Br. Prodr.* 152.

Hab. Port Dalrymple, *Paterson.* (Cultivated in England.)

Distrib. Victoria (*Mueller*).

This remarkable Fern has not been found in Tasmania since Colonel Paterson's visit, in the very early part of this century, but it has long been cultivated at Kew from spores either taken from the dried plant, or that came over in soil with other plants. It is at once distinguished by its simple, rarely pinnatifid fronds, of which the sterile are linear-lanceolate, acuminate, and crenate, the fertile very narrow and linear-elongate.

§ b. *Sterile fronds pinnate. All, or at least the lowest pinnæ, contracted at the base, or stipitate.*

2. **Lomaria procera** (Spr. Syst. Veg. iv. 65); elata, rigida, valde coriacea, frondibus pinnatis, pinnis sterilibus lineari-oblongis v. ensiformi-lanceolatis v. acutis acuminatis caudatisve basi truncatis angustatis auriculato-cordatisve, fertilibus (ejusdem v. diversæ frondis) linearibus, costa subtus stipite rachique paleacea v. nuda.—*Hook. Ic. Plant. t.* 427, 428; *Fl. Antarct. p.* 110; *Fl. N. Zeal.* ii. 27. L. latifolia, *Col. in Tasm. Phil. Journ.* Stegania procera, *Br. Prodr.* 153; *A. Rich. Fl. N. Zeal. p.* 86. *t.* 13. Blechnum procerum, *Lab. Fl. Nov. Holl.* ii. *p.* 87. *t.* 247. Parablechnum procerum, *Presl, Epimel. p.* 109.

Var. *α*; elata, robusta, valde coriacea, pinnis sterilibus basi oblique truncatis v. late cuneatis.

Var. *β*; omnia var. *α*, sed pinnis sterilibus basi auriculato-cordatis.

Var. *γ*; omnia var. *α* et *β*, sed pinnis sterilibus basi angustatis.

Var. δ. *minor;* pallide viridis, minus coriacea, pinnis sterilibus subobtusis basi subtransversa superioribus adnatis.—? Stegania minor, *Br. Prodr.* 154.

Hab. Abundant (especially the var. *α*) in wet, shady places, throughout the Island.—(*v. v.*) Var. δ. Macquarrie Harbour, etc., *A. Cunningham, Gunn.*—(*v. v.*)

Distrib. Throughout the temperate, damp regions of the southern hemisphere. (Cultivated in England.)

A common and extremely variable Fern, of a very coarse texture, which I cannot distinguish specifically from the West Indian *L. lineata*, the South American *L. Chilensis*, and the South African *L. Capensis.* It differs from the Antarctic American *L. Magellanica* in the broader and shorter paleæ at the base of the stipes.—*Fronds* a span to 4 feet high, tufted, growing from a stout caudex that often becomes woody and frutescent. *Stipes* very stout, generally paleaceous at the base. *Rachis* generally naked and glabrous. *Sterile fronds* pinnate, short, and broadly ovate or lanceolate. *Pinnæ* three to twenty pairs, distant, or approximate and imbricating at the base; the upper generally adnate, lower stalked, extremely variable in length, from 2–12 inches long, and from ½–1½ inch broad, broadly oblong or linear, and almost strap-shaped, blunt, acute, acuminate or tailed; the base acute, cuneate, truncate, cordate, or produced into great lobes above and below, which sometimes lap over those of the pinnæ above it and the rachis; of a very rigid texture, marked with close grooves between the veins; margins finely and minutely toothed. *Terminal pinna* long or short, sometimes erect, and much larger than the lateral ones. *Lowest pinnæ* sometimes obliquely ovate, or even orbicular-reniform. *Fertile pinnæ* on separate fronds, or occupying half (one side) of the sterile, or a few pinnæ or portions of them only are soriferous, narrow-linear, 3–8 inches long, sometimes so narrow as to be filiform. *Costa* naked or paleaceous.

3. **Lomaria fluviatilis** (Spr. Syst. Veg. 64); frondibus cæspitosis linearibus elongatis pinnatis, pinnis sterilibus plurimis membranaceis oblongo-rotundatis lineari-oblongisve obtusis crenatis margine undulatisve infimis breve stipitatis supremis basi lata adnatis confluentibusve, pinnis fertilibus brevibus linearibus erectis obtusis, rachi stipiteque brevi squamis patentibus, rhizomate crinito-paleaceo.—*Fl. N. Zeal.* ii. 28. L. rotundifolia, *Raoul, Choix des Plantes Nouv. Zél. p.* 9. *t.* 2 *B.; Col. in Tasm. Phil. Journ.* Stegania fluviatilis, *Br. Prodr.* 154. (Tab. CLXVII.) (*Gunn*, 26, 1524.)

Hab. Covering shaded precipices near the Acheron River, on the road to Macquarrie Harbour, *Gunn.*—(*v. v.*)

Distrib. South-eastern Australia, New Zealand.

A very distinct species, though varying a good deal in size and form of pinnæ.—*Rhizome* stout, often woody, and base of the short stipes thickly clothed with long scales. *Fronds* 8–18 inches high, tufted, very narrow. *Pinnæ* numerous; of the sterile fronds rounded or linear-oblong, blunt, waved or crenate at the tip, ½–1¼ inch long, lower shortly stipitate, upper adnate by a broad base; top ones confluent: of the fertile fronds fewer, erect,

linear, narrow, blunt, $\frac{1}{3}$-$\frac{2}{3}$ inch long. *Stipes* and *rachis* covered with more or less spreading scales.—PLATE CLXVII. Fig. 1, fertile pinnules; 2, transverse section of the same; 3, capsules; 4, spores:—*all magnified.*

§ c. *Frond pinnatifid, or pinnate, when the lower pinnules are adnate by a very broad base to the rachis.*

4. **Lomaria Vulcanica** (Blume, En. Fil. Jav. 202); rhizomate crasso paleis crinito, fronde sterili sublonge stipitata coriacea lanceolata ovata v. ovato-deltoidea pinnatifida basi pinnata, pinnis glabris approximatis falcatis infimis decurvis lanceolatis obtusis acuminatisve integerrimis v. subcrenatis, costa nervisque glabris v. villosulis, fertilibus patentibus anguste linearibus basi obtusis acutisve dilatatis, involucris marginalibus laceris, stipite basi crinito.—*Fl. N. Zeal.* ii. 29; *Hook. Ic. Plant. t.* 969. L. deflexa, *Col. in Tasm. Phil. Journ.* (*Gunn*, 28, 1522.)

HAB. Franklin River, and other mountainous parts of the Colony, *Gunn.*

DISTRIB. New Zealand; lofty mountains of Java.

A very distinct species, easily recognized by the often deltoid coriaceous frond, the two lower pinnæ of which are deflexed.—*Rhizome* usually very stout and woody, sometimes (in New Zealand) as thick as the wrist. *Fronds* terminal, 4–18 inches long, tufted, on long stipes, ovate or lanceolate, deltoid, coriaceous. *Pinnæ* close, $1\frac{1}{2}$–3 inches long, falcate, acuminate (rarely blunt), perfectly entire or irregularly crenate, glabrous or pubescent on the costa and nerves below (especially in Java specimens). *Fertile fronds* with much narrower pinnæ, and marginal sori sometimes covering the whole pinna. *Rachis* and *stipes* pale, the latter crinite with long, black, scaly bristles at the base.

5. **Lomaria lanceolata** (Spr. Syst. Veg. 62); frondibus fertilibus utrinque concoloribus submembranaceis cæspitosis glabris anguste elongato-lanceolatis acuminatis basi angustatis breviter stipitatis pinnatifidis basi pinnatis, pinnis plurimis approximatis oblongo-lanceolatis obtusis acutis v. acuminatis subfalcatis integerrimis v. subsinuato-crenatis, infimis rotundatis nunc discretis, rachi costaque glaberrima, fronde fertili sterilibus breviore, pinnis patentibus linearibus acutis v. acuminatis, stipite basi squamato subcrinito. —*Hook. Ic. Plant. t.* 429; *Fl. N. Zeal.* ii. 29. L. obtusata, *Lab. Sert. Nov. Caled. t.* 6. Stegania lanceolata, *Br. Prodr.* 154; *Endl. Prodr. Fl. Ins. Norf.* (*Gunn*, 27, 1525.)

HAB. Abundant in subalpine moist forests, etc., by streams of water.—(*v. v.*)

DISTRIB. South-eastern Australia, New Zealand, Norfolk Island, New Caledonia, Loyalty Islands.

Fronds tufted, on a very short, erect caudex, 2 inches to 2 feet high, firm in texture, but not coriaceous, pale-green, paler below; barren ones quite glabrous, long, linear-lanceolate, acuminate, much narrowed below, often produced to the base of the short stipes, pinnate below, pinnatifid above. *Pinnæ* very numerous and close, narrow or broadly oblong-lanceolate, $\frac{1}{2}$–2 inches long, blunt or sharp, quite entire or bluntly toothed towards the tip, transversely ribbed by the forked veins. *Fertile fronds* shorter; pinnæ distant, spreading, narrow-linear, acute or acuminate. *Rachis* and *costæ* quite smooth and glabrous. *Stipes* with long, subulate, blackish scales at the base. —Norfolk Island specimens are very much larger than Tasmanian or New Zealand ones, and have almost filiform fertile pinnæ, with subulate tips.

6. **Lomaria discolor** (Willd. Sp. Pl. v. 293); frondibus cæspitosis, fertilibus glaberrimis subcoriaceis subtus discoloribus rufo-brunneis (rarius concoloribus) pinnatifidis (basi sæpius pinnatis) elongato-lanceolatis acutis basi angustatis, pinnis plurimis (subpectinatis) divaricatis approximatis sinu angusto acuto lineari-lanceolatis obtusis acutis acuminatisve infimis brevibus integerrimis v. obscure sinuatis, costa rachique glaberrimis, fronde fertili plerumque pinnatifida pinnis obtusis basi dilatatis nudis inferioribus sterilibus rarius pinnata pinnis basi substipitatis, costa valida atra, stipite brevi basi paleaceo.—*Fl. N. Zeal.* ii. 32. Hemionitis discolor, *Schk. Fil. t.* 6 (*sub nom.* H. rufa). Onoclea nuda, *Lab. Fl. Nov. Holl.* ii. *p.* 96. *t.* 246. ? Stegania falcata, *Br. Prodr.* 154. (*Gunn*, 2, 1520.)

HAB. Abundant in damp forests, etc.—(*v. v.*)

DISTRIB. South-eastern Australia, New Zealand.

It is generally easy to distinguish this from *L. lanceolata* by the red colour of the under surface of the frond, but this is not always the case, either in New Zealand or in Australian and Tasmanian specimens. Labillardière hence made a new species of the Tasmanian, which has been retained by Mr. Brown; but I find the colour to vary from green to red-brown, and there is no other character whereby to separate them.—*Fronds* tufted on the top of a very short, woody, erect, thick caudex, forming an elegant crown, 1–3 feet long, narrow, linear-lanceolate, perfectly glabrous, rather coriaceous, pinnatifid. *Pinnæ* very numerous, close, and placed at right angles to the rachis, with a narrow slit between the contiguous pairs, straight, linear-oblong or lanceolate, blunt, sharp, or acuminate, 1½–4 inches long, obscurely serrate or quite entire; lowest smaller, sometimes distant. *Fertile fronds* pinnate or pinnatifid; pinnæ spreading, stout, linear, dilated, adnate, or contracted and almost stipitate at the base; lower pinnæ often quite barren, and like those of the barren frond. *Costa* and *rachis* quite smooth, the latter very stout, often black, deeply channelled in front. *Stipes* short, stout, scaly at the base.

7. **Lomaria alpina** (Spr. Syst. Veg. iv. 62); glaberrima, fronde sterili stipitata anguste lineari profunde pinnatifida v. pinnata, pinnis approximatis basi lata sessilibus oblongis obtusis coriaceis inferioribus minoribus, costa tenui, rachi valida, fronde fertili elongata sterilibus longiore pinnata, pinnis lineari-oblongis obtusis divaricatis curvis, infimis parvis remotis sterilibus, stipite valido nudo v. sparse squamato, rhizomate cæspitoso repente squamoso.—*Fl. Antarct. p.* 392. *t.* 150; *Fl. N. Zeal.* ii. *p.* 30; *Hook. Fil. Exot. t.* 32. L. polypodioides, *Gaud. in Freyc. Voy. Bot.* 374. L. Antarctica, *Carm. Fl. Ins. Trist. d'Acunha in Linn. Trans.* xii. 512. L. linearis, *Col. in Tasm. Phil. Journ.* ii. *p.* 176. Stegania alpina, *Br. Prodr.* 152. (*Gunn*, 21, 1523.)

HAB. Abundant in boggy places, and on the tops of all the mountains.—(*v. v.*)

DISTRIB. Mountains of Victoria, New Zealand, South Chili, Fuegia, and the Antarctic Islands. (Cultivated in England.)

A small, coriaceous species, with creeping rhizome and very cæspitose narrow fronds, of which the fertile are always much the longest; weak, elongated specimens have less coriaceous fronds, with obscurely sinuate pinnules. —*Fronds* 2 inches to 2 feet high, with long stipes, linear, ½–¾ inch broad, narrowed above and below, deeply pinnatifid or pinnate. *Pinnæ* twenty to fifty pairs, very close together, linear-oblong, blunt, sessile on very broad bases. *Fertile fronds* pinnate; pinnæ spreading, sometimes deflexed, remote, linear, blunt, curving upwards, rarely straight and short; lowest remote, small, rounded, often without sori. *Involucres* distinct, scarious. *Rachis* and *stipes* stout, smooth, sometimes with a few paleæ. *Rhizome* paleaceous.

Gen. XIII. ASPLENIUM, *L.*

Sori lineares, sparsi, superficie (rarius margine) frondis, venis paralleli. *Involucrum* e vena lateraliter ortum ducens, margine superiore libero.

One of the largest and most widely diffused genera of Ferns, of which the species also have an extensive geographical distribution, and are extremely variable. The genus is distinguished by bearing on the back of the frond linear sori, covered with a linear membranous involucre *Involucre* attached lengthwise to a veinlet (with which the sori are parallel), opening lengthwise and inwards; sometimes the fronds are cut or divided between every veinlet, when the sori become marginal, and the involucres appear to open outwards, but if the whole pinna be carefully regarded, it will be seen that the involucre really opens towards its costa. (Name from α, privative, and σπλην, *the spleen;* in allusion to some supposed medicinal qualities.)

§ a. *Fronds simply pinnate; pinnæ toothed, scarcely lobed. Involucre with one free margin.*

1. **Asplenium flabellifolium** (Cav. Præl. 1801. p. 258); parvulum, flaccidum, frondibus decumbentibus, lineari-elongatis pinnatis, pinnis rhombeis breviter stipitatis antice crenato-dentatis, rachi lævi filiformi apice elongato radicante.—*Sw. Fil. p.* 81. *t.* 31. *f.* 2; *Br. Prodr.* 150; *Fl. N. Zeal.* ii. 33. (*Gunn,* 22.)

HAB. Abundant in most parts of the Island, especially in rocky or stony soil.—(*v. v.*)

DISTRIB. South-eastern and Western Australia, New Zealand. (Cultivated in England.)

Fronds tufted, straggling, prostrate or pendulous, slender, weak, flaccid, 3–8 inches long, pinnate, quite glabrous. *Pinnæ* very variable in size and shape, $\frac{1}{4}$–$\frac{2}{3}$ inch long, shortly stipitate, rhomboid or orbicular, broadly cuneate or rarely reniform at the base; outer margin coarsely crenate or lobed. *Sori* radiating from the base of the pinna. *Rachis* filiform, elongated, its apex without pinnæ, often rooting.—This is a very distinct species from any of the following.

2. **Asplenium Trichomanes** (Linn. Sp. Pl. 1540); frondibus parvulis pinnatis subcoriaceis cæspitosis erecto-patentibus lineari-elongatis, pinnis rotundatis oblongisve obtusis crenatis basi cuneato-truncatis, rachi stipiteque nigris.—*Eng. Bot. t.* 576. (*Gunn,* 37, 1532.)

HAB. Clefts of rocks by the Acheron and Franklin Rivers, *Gunn.*—(*v. v.*)

DISTRIB. New South Wales, Victoria, South Africa, Pacific Islands, South America, and throughout the temperate regions of the northern hemisphere. (Common in Britain.)

A less straggling plant than *A. flabellifolium,* readily distinguished by its black stipes and rachis, and more coriaceous fronds that do not root at the apex.

3. **Asplenium obtusatum** (Forst. Prodr. n. 430); frondibus coriaceis cæspitosis erectis v. pendulis pinnatis, pinnis breviter stipitatis oblongis oblongo-lanceolatisve obtusis acutis acuminatisve serratis crenatisve basi oblique cuneatis rotundatis truncatisve, rachi crassa marginata glaberrima v. sparse subsquamoso-pilosa, stipite basi squamato, squamis nitidis.

Var. *α*; fronde erecta, pinnis valde coriaceis obtusis acuminatisve, venis ut plurimum simplicibus.—A. obtusatum, *Forst. Prodr.; Lab. Fl. Nov. Holl.* ii. *p.* 93. *t.* 242. *f.* 2; *Br. Prodr.* 150; *Schkuhr, Fil.* i. *p.* 6. *t.* 68; *Fl. Antarct. p.* 108; *Fl. N. Zeal.* ii. 33; *Hook. Fil. Exot. t.* 46. (*Gunn,* 1527.)

Var. *β. obliquum;* pinnis coriaceis elongatis lanceolatis acuminatis, soris linearibus, venis subremotis simplicibus furcatisve.—*Fl. Antarct. p.* 108; *Fl. N. Zeal.* ii. 33. A. obliquum, *Forst. Prodr. n.* 429; *Schkuhr, Fil. t.* 71; *Lab. l. c. t.* 242. *f.* 1. A. oblongifolium, *Col. in Tasm. Phil. Journ.*

HAB. Very abundant, especially on maritime rocks.—(*v. v.*)

DISTRIB. South-eastern Australia, New Zealand, Lord Auckland's and Campbell's Islands, South Africa. (Cultivated in England.)

The form I have called var. *α* is an extremely abundant Fern in the southern hemisphere, especially on maritime rocks, and represents in these regions its very near ally, the common *A. marinum* of England, from which it differs chiefly in the upper pinnæ being confluent into a broader terminal pinna, and in the generally simple veins, characters which I fear may prove inconstant.—*Fronds* very thick and leathery, tufted, 3 inches to 3 feet long, erect or pendulous, pinnate; *pinnæ* 1–4 inches long, stalked, linear- or oblong-lanceolate or oblong, blunt or sharp; *base* truncate, cuneate, or rounded; *margin* coarsely crenate or serrate. *Veins* often quite simple. *Rachis* very stout, compressed, margined, glabrous or with a few scattered soft hairs. *Stipes* covered at the base with long, broad, erect, shining, subulate scales.—Small plants have only one or two pairs of pinnæ, which are often short and blunt. Sometimes the lower pinnæ are lobed or pinnate at the base.

4. **Asplenium lucidum** (Forst. Prodr. n. 427); frondibus submembranaceis cæspitosis pinnatis, pinnis ovato- v. oblongo-lanceolatis longe acuminatis stipitatis basi angustatis grosse crenatis, soris elongatis, rachi gracili non marginata, stipite basi squamato, squamis nitidis.—*Schkuhr, Fil. t.* 72; *Fl. N. Zeal.* ii. 33.

Hab. Mount Wellington, *Frazer.*

Distrib. New Zealand.

Most probably only a variety of *A. obtusatum*, but a very distinct-looking one in its ordinary state. It may be distinguished by its larger size, more membranous texture, deeper green colour, shining surface, more narrowed longer pinnæ, which have longer stalks, and by the rachis not being margined.—I have seen only a fragment of a specimen collected by Frazer, and labelled as above, but which may possibly have been collected in New Zealand, where this Fern is very common.

§ b. *Fronds bipinnatifid, bipinnate, or decompound, sometimes irregularly divided into many elongated pinnules. Sori on the backs or margins of the lobes. Involucre as in* § a.

5. **Asplenium bulbiferum** (Forst. Prodr. n. 433); fronde bi-tripinnata lanceolata flaccida glabra sæpius prolifera, pinnis primariis elongato-lanceolatis acuminatis, pinnulis lineari-oblongis stipitatis inciso-lobatis soris (brevibus) margine remotis v. inciso-pinnatifidis soris marginalibus, lobulis obtusis, rachi marginata v. elata, glabrata v. parce paleacea, stipite subcompresso basi nudiusculo.—*Schkuhr, Fil. t.* 79; *Hook. Ic. Pl. t.* 423. (*Gunn,* 1530.)

Var. *β. laxa;* frondibus sæpius pendulis minoribus.—*Fl. N. Zeal.* ii. 34. A. laxum, *Br. Prodr.* 151. Cœnopteris appendiculata, *Lab. Nov. Holl.* ii. 94. *t.* 243. (*Gunn,* 25, 1529.)

Var. *γ;* frondibus pendulis, pinnis inciso-lobatis basi pinnatis, pinnulis obovatis obtuse incisis.—*Fl. N. Zeal.* ii. 34. *Ad* A. flaccidum, *Forst., tendet.*

Hab. Abundant in damp woods throughout the Island.—(*v. v.*)

Distrib. South-eastern Australia and New Zealand. (Cultivated in England.)

The most highly developed form of this Fern is a very beautiful one, and easily recognized by its habit of bearing germinating bulbs on its pinnules, whence its name; but this character is not always present, and then the species becomes *A. laxum*, Br. Pendulous specimens of the var. *laxa* pass into *A. flaccidum*, Forst.—*Fronds* 1–3 feet high, flaccid, glabrous, broadly ovate-lanceolate or linear-lanceolate, erect or pendulous, bright-green, not so pale and coriaceous as in *A. flaccidum*, bi-tripinnate, generally bipinnate. *Pinnæ* 6–10 inches long, with a margined or winged rachis; *pinnules* stipitate, linear-obovate or oblong; or broadly ovate, lobed or pinnatifid. *Sori* short, marginal in pinnatifid fronds; sometimes the fronds are simply pinnate, and the pinnæ lanceolate lobed or toothed, or pinnate below and lobed above; or sometimes the pinnules are distant and stalked, or pinnatifidly cut into linear distant lobes, as in *A. flaccidum*. *Rachis* glabrous, or with a few scattered paleæ. *Stipes* generally compressed or angled, sometimes margined, more or less paleaceous at the base.

6. **Asplenium flaccidum** (Forst. Prodr. n. 426); frondibus cæspitosis crasse coriaceis erectis v. pendulis ovatis oblongis loricatisve rigidis v. flaccidis pinnatis bipinnatis v. laxe dichotome ramosis, ramis pinnisve brevibus v. valde elongatis remotis v. approximatis simplicibus pinnatifidis pinnatisve, lobis pinnisve varie sectis ultimis plerisque linearibus obtusis, soris marginalibus rarius dorsalibus, rachi glabra marginata, stipite basi paleaceo, rhizomate fibroso squamis latis longe acuminatis aucto.—*Fl. Antarct. p.* 109. *Fl. N. Zeal.* ii. 34. Cœnopteris Novæ-Zelandiæ, *Spr. in Schrad. Journ.* 1799. ii. *p.* 269; *Schk. Crypt. t.* 82. Darea flaccida *et* D. Odontites, *Willd. Sp. Pl.* 296. (*Gunn,* 1533.)

Hab. Not uncommon on exposed rocks, etc.—(*v. v.*)

Distrib. New South Wales and New Zealand. (Cultivated in England.)

A very variable Fern, more coriaceous and generally less divided than *A. bulbiferum*, of a paler colour, and with more often linear-elongate segments.

§ ALLANTODIA.—*Involucre membranous, arched, both margins attached to the vein, hence cylindrical.*

7. **Asplenium (Allantodia) Brownii** (J. Sm. Gen. Fil. et Bot. Mag. Suppl. lxxii. p. 30); fronde ampla membranacea deltoidea flaccida bi-tripinnata, pinnis lineari-oblongis acutis, pinnulis oblongo-lanceolatis obtusis v. acuminatis profunde pinnatifidis, lobis oblongis obtusis integerrimis crenatis inciso-serratisve, rachibus glaberrimis flexuosis, stipite lævi glabro v. basi subsquamato.—*Hook. Ic. Pl. t.* 978; *Fl. N. Zeal.* ii. 36. Athyrium australe, *Presl, Pterid. p.* 98; *Fée, Gen. Fil. p.* 186. Allantodia australis, *Br. Prodr. p.* 149. (*Gunn,* 42, 1531.)

HAB. Not rare in dense shaded forests: Fingal and Circular Head, *Gunn*; Huon River, *J. D. H.*—(*v. v.*)

DISTRIB. New South Wales, New Zealand, Malay Islands. (Cultivated in England.)

One of the most delicate and beautiful Ferns in Tasmania, and very similar to, if not identical with a species from the Society Islands, East Indies, and South America.—*Fronds* very membranous, flaccid, quite glabrous, 2–4 feet high, broadly deltoid, spreading, bi-tripinnate. *Primary pinnæ* linear-oblong, acute or acuminate; *secondary* (or pinnules) 1–2 inches long, oblong-lanceolate, shortly stipitate, pinnatifid or pinnate; *segments* linear-oblong, blunt, crenate or inciso-serrate, rarely quite entire. *Sori* generally numerous, 1–2 lines long, nearer the costa than the margin. *Rachis* quite glabrous, slender, rather flexuous. *Stipes* long, smooth, glabrous, or scaly at the base.—Small specimens of this plant, growing in drier situations, have narrower fronds, not so membranous, and nearly entire lobes of the pinnules.

Gen. XIV. DOODIA, *Br.*

Sori lunulati v. lineares, 1–2-seriati, costæ paralleli. *Involucrum* e ramulo anastomosante venæ ortum, planum, intus liberum.—Frondes *cæspitosæ, rigidiusculæ, duriusculæ, pinnatæ.*

A small genus of Ferns, natives chiefly of the tropics and south temperate zone, being found in India, the Malay and Pacific Islands, and in Australia and Tasmania.—*Fronds* in *D. caudata* very harsh, coriaceous, erect, 3–18 inches long, tufted, linear-lanceolate, pinnate, the apex often dilated or running out into a linear tail. *Stipes* short. *Rachis* glabrous or pubescent. *Pinnæ* $\frac{1}{2}$–2 inches long, spreading; upper confluent or adnate by a broad base, linear-oblong or ovate-oblong, blunt; the lower smaller, shortly stipitate, cordate, truncate, rounded or subdilated at the base, sharply toothed, glabrous or pubescent below; the veins prominent when dry, forked, united by a transverse branch. *Sori* short, linear or crescent-shaped on the back of the pinnæ, forming one or two rows parallel to one another on each side of the costa. *Involucre* linear, placed on an arching veinlet that joins two veins, opening towards the costa. (Named in honour of *S. Doody*, an old author on English Cryptogamic Botany.)

1. **Doodia caudata** (Br. Prodr. 151).—*Hook. Exot. Flor. t.* 25; *Fl. N. Zeal.* ii. 37. D. Kunthiana, *Endl. Prodr. Fl. Ins. Norf.* 11; *Gaud. in Freyc. Voy. Bot. p.* 401. *t.* 14. D. aspera, *Br. Prodr.* 151. (*Gunn,* 1.)

HAB. Abundant in dry, stony places, as well as in shaded situations.—(*v. v.*)

DISTRIB. Extratropical Australia, New Zealand. (Cultivated in England.)

Gen. XV. POLYSTICHUM, *Schott.*

Sori globosi, dorsales, medio venarum venularumque inserti. *Involucrum* orbiculare, peltatim medio sori affixum, substipitatum, undique liberum.—Rhizoma *breve v. elongatum.* Frondes *alternæ v. cæspitosæ, bi-tripinnatæ.*

A very large genus of Ferns, found in all parts of the globe, and of which the species are very widely distributed and variable.—*Fronds* (in the Tasmanian species) bi-tripinnate, coriaceous, lobed, serrate, or spinulose. *Sori* round, placed on the middle of the veins at the back of the pinnules, remote from the margin. *Involucre* orbicular, peltately attached by a short stalk to the centre of the sorus, its edges free all round. (Name from πολυς, *many*, and στιχος, *a row;* from the numerous sori.)

1. **Polystichum coriaceum** (Schott, Gen. Fil.); rhizomate elongato repente squamato, fronde pinnata v. bipinnata coriacea ovato-oblonga deltoidea, pinnis superioribus crenatis inferioribus pinnatifido-lobatis obtusis integerrimis crenatisve, rachi squamosa, stipite paleaceo.—*Fl. N. Zeal.* i. 37. Aspidium coriaceum, *Br. Prodr.* 147; *Schkuhr, Fil. t.* 50; *Endl. Prodr. Fl. Ins. Norf.* 8. A. Cunninghamianum, *Col. in Tasm. Phil. Journ.* (*Gunn*, 9, 1516.)

Hab. Not uncommon in forests, etc.: St. Patrick's River, *Gunn;* sides of Mount Wellington, *J. D. H.* (*v. v.*)

Distrib. Throughout the tropics and south-temperate regions of the globe. (Cultivated in England.)

This plant varies a good deal in stature and amount of division of the fronds, number, distance, and length of the pinnæ; the fronds are always extremely coriaceous, and pale-brown when dry.—*Rhizome* stout, creeping, clothed with large membranous scales. *Frond* 6–24 inches high, very firm and thick in texture, ovate, deltoid or oblong-lanceolate, pinnate or bipinnate. *Pinnules* stalked, ovate or linear-oblong, entire or lobed; lobes rounded, quite entire or crenate. *Sori* large, brown or black. *Rachis* generally with spreading, scale-like hairs. *Stipes* stout, covered with scattered large paleæ, rarely naked.

2. **Polystichum vestitum** (Presl, Pterid. 83); frondibus coriaceis bipinnatis (interdum proliferis), pinnis lineari-lanceolatis, pinnulis brevi-stipitatis oblique ovato-oblongis glabris mucronatis integris crenatis v. argute inciso-dentatis inferioribus nunc basi pinnatifidis, lobulo antico dilatato, stipite rachique villoso paleisque latis castaneis deciduis onusto, rhizomate et basi stipitis squamis magnis densissime tectis.—*Fl. N. Zeal.* ii. 38. Aspidium vestitum, *Willd. Sp. Pl.; Schkuhr, Fil. t.* 43. A. proliferum, *Br. Prodr.* 147. A. pulcherrimum *et* A. Waikarense, *Col. in Tasm. Phil. Journ.* A. venustum, *Homb. et Jacq. Voy. au Pôle Sud, t.* 5; *Fl. Antarct. p.* 107. *An* Polytrichum aculeatum, *Roth?* (*Gunn*, 7, 1517.)

Hab. Abundant in subalpine situations, as on Mount Wellington, from 3000 feet to the summit.—(*v. v.*)

Distrib. South-eastern Australia, New Zealand, Malay Islands, extratropical South America. (Cultivated in England.)

A very handsome and variable Fern. Mr. Brown's *A. proliferum*, founded on a proliferous plant, supposed both by Mr. Brown and myself (see 'Flora Antarctica') to want the broad scales, is the same as this; for Mr. Gunn has sent specimens of it equally possessing the scales in a young state, and the *P. vestitum* is often proliferous in New Zealand. In Lord Auckland's Group it becomes subarboreous, having a stout caudex 2–4 feet high.—*Fronds* very numerous, spreading like a crown from a stout rhizome, 1–3 feet high, rigid, coriaceous, linear or ovate-oblong, bipinnate. *Pinnæ* linear-lanceolate, acuminate. *Pinnules* numerous, shortly stipitate, ovate-oblong, entire, sharply toothed or almost pinnatifid, the lobes often pungent; the lower outer margin produced into a short, broad, blunt auricle. *Rachis* woolly, and as well as the *stipes* covered with large, ovate-lanceolate, acuminate, membranous scales, that are often lacerated, and are deep brown; those at the base of the stipes of large specimens have a white margin, and are very densely set, an inch long, and curved.

Gen. XVI. NEPHRODIUM, *Br.*

Sori globosi, dorsales, medio v. ad apicem venularum inserti. *Involucrum* reniforme, sinu affixum.

A large genus of Ferns, natives of both hot and cold climates, chiefly distinguished from *Polystichum* by the

involucre being reniform and attached by the sinus, and not orbicular or peltately attached. (Name from νεφρος, *a kidney;* in allusion to the form of the involucre.)

1. **Nephrodium decompositum** (Br. Prodr. 149); frondibus glabris puberulis vel pubescentibus ovatis v. deltoideis bi-tri-quadripinnatis membranaceis, pinnulis decurrenti-coadunatis ovato- v. oblongo-lanceolatis inciso-lobatis pinnatifidisve, lobulis dentatis acutis obtusisve, rachibus tenuiter marginatis, stipite gracili basi nudo.—*Fl. N. Zeal.* ii. *p.* 39. *t.* 79. (*Gunn,* 53.)

HAB. Woods near Hobarton.—(*v. v.*)

DISTRIB. South-eastern Australia, New Zealand. (Cultivated in England.)

A common and very variable plant.—*Frond* a span to 3 feet high, ovate-lanceolate, broadly ovate, or deltoid, sometimes pentagonous from the first division of the lowest branch being elongated, tri-quadripinnate or bipinnate only, quite smooth or more or less downy, sometimes covered with resinous, glandular points. *Pinnæ* often elongate and even caudate, especially in Tasmania. *Pinnules* small, decurrent, oblong or ovato-lanceolate, pinnatifid, lobed or toothed; divisions very sharp or blunt. *Sori* small, numerous, placed on the middle of a venule. *Involucre* glabrous or hairy. *Rachis* with a very narrow wing or margin, or naked, smooth or pubescent, as is the *stipes,* which is slender, and bears at the curved base a few short chaffy scales.

Sub-tribe B.—*Sorus naked, neither covered by an involucre, nor by the inflexed margin of the frond.*

Gen. XVII. POLYPODIUM, *Presl.*

Sori globosi, dorsales, nudi, medio venularum inserti. *Venæ* furcatæ, nunquam anastomosantes.—Frons *pinnatifida v. bi-tripinnata.*

An extensive genus, principally of temperate and tropical Ferns, which may be readily characterized by having round, naked sori, placed on the middle of forked, free veinlets. One of the Tasmanian species (*P. rugulosum*) appears to me to pass into *Hypolepis tenuifolia,* the sori sometimes approaching the margin of the lobes, and the latter becoming more or less recurved. The other species totally differs in habit and appearance from the above. (Name from πολυς, *many,* and πους, *a foot;* in allusion to the habit of some Fern to which the name was applied by the ancients.)

1. **Polypodium rugulosum** (Lab. Fl. Nov. Holl. ii. p. 92. t. 241); rhizomate repente, fronde viscido-puberula v. glandulosa bi-quadripinnata ovato- v. deltoideo-lanceolata, pinnis lanceolatis acuminatis submembranaceis coriaceisve, pinnulis lineari-oblongis obtusis profunde pinnatifidis, lobis obtusis crenatis, stipite rachique castaneis (rarius pallidis) scaberulis hispidulis asperisve.—*Br. Prodr.* 147; *Fl. N. Zeal.* iv. 41. P. viscidum, *Spr. Syst. Veg.* iv. *p.* 61; *Fl. Antarct. p.* 110. P. villoso-viscidum, *Petit-Thouars, Fl. Trist. d'Acun.; Col. in Tasm. Phil. Journ.* Cheilanthes viscosa, *Carm. Fl. Trist. d'Acun. in Linn. Soc. Trans.* xii. *p.* 511. (*Gunn,* 17.)

HAB. Abundant in damp and rather dry woods.—(*v. v.*)

DISTRIB. Common in the subtropical and temperate regions of the southern hemisphere. (Cultivated in England.)

Whole plant more or less covered with rufous glandular pubescence, a span to 3 feet high.—*Frond* bi-tri-quadripinnate, broadly deltoid or ovate-lanceolate, more or less membranous, rarely coriaceous. *Pinnæ* very variable in length, lanceolate, acuminate. *Pinnules* adnate by a broad base, linear-oblong, blunt, deeply pinnatifid; lobes entire or crenate, blunt. *Sori* on the middle of a veinlet. *Stipes* and *rachis* generally dark-brown, slender, scabrid, sometimes muricated, often hispid with scattered hairs, rarely glabrous. *Rhizome* rigid, woody, creeping, scaly and hispid, sending up distant fronds.—I have found it quite impossible to give distinctive characters to the numerous varieties of this very common plant. Mueller's *P. Kippistianum* appears to be a more glabrous state, found in Australia, New Zealand, and Tasmania.

Obs. Amongst Gunn's specimens of this plant and *Hypolepis tenuifolia,* I find specimens of *Hyp. tenuifolia,* Hook. (a New Zealand species), which I regret having overlooked previously. It may be known by its small size and simply bipinnate fronds, and is perhaps only a small state of *H. tenuifolia.* Mr. Gunn's specimens are from the cataracts of the South Esk River and Western Mountains, elev. 2000 feet (n. 1544 and 1544 ?).

2. **Polypodium Grammitidis** (Br. Prodr. 147); fronde glaberrima lineari v. lineari-oblonga profunde decursivo-pinnatifida, pinnis linearibus integris lobato-dentatis v. rarius pinnatifidis, lobis interdum elongatis caudatisve, soris globosis oblongisve.—*Fl. Antarct. p.* 111; *Fl. N. Zeal.* ii. 41. Grammitis heterophylla, *Lab. Fl. Nov. Holl.* ii. *p.* 90. *t.* 239. Xiphopteris heterophylla, *Spr. Syst. Veg.* iv. 44. (*Gunn,* 11, 1543.)

Hab. Abundant on subalpine rocks, forming matted patches.—(*v. v.*)

Distrib. New Zealand, Java.

Roots fibrous. *Fronds* an inch to a span long, tufted, linear-oblong, ovate or lanceolate, coriaceous, opaque, scaly at the very base of the stipes, perfectly glabrous elsewhere, deeply pinnatifid. *Pinnules* somewhat distant, linear, blunt, decurrent, quite entire, or lobed, or subpinnatifid, often irregularly, with one or two lobes lengthened or running out into a tail. *Sori* round or oblong. *Rachis* and short *stipes* winged nearly to the base.—Dwarf states have small, linear, lobed fronds.

Gen. XVIII. PHYMATODES, *Presl.*

Sori in sp. Tasmaniæ uniseriales, plus minusve fossa frondis immersi, globosi v. oblongi, nudi. *Venæ* furcatæ, omnes anastomosantes, areolis subhexagonis; *venulis* paucis, areolis liberis.—Rhizoma *repens, squamosum.* Frondes *coriaceæ, simplices v. pinnatifidæ.* Stipes *basi articulatus.*

A very abundant tropical genus of Ferns, generally growing on trunks of trees, distinguished by the naked (large) sori partly sunk in a pit of the frond, and the anastomosing veins. The fronds are coriaceous, simple or pinnatifid, perfectly glabrous, rising from a stout, creeping rhizome. (Name from φυμα, *a swelling;* in allusion to the thickened base of the articulated frond.)

1. **Phymatodes Billardieri** (Presl, Pterid. 196); frondibus coriaceis glaberrimis integris pinnatifidisque, pinnis remotis approximatisve anguste linearibus v. late oblongis margine incrassatis, soris subsaccatis solitariis, rhizomate glaucescente crasso subsquamoso.—*Fl. Antarct.* i. 111; *Fl. N. Zeal.* ii. 42. Polypodium, *Br. Prodr.* 147. P. scandens, *Lab. Fl. Nov. Holl.* ii. *p.* 91. *t.* 240 (*non Forst.*). (*Gunn,* 6.)

Hab. Abundant on rocks and trunks of trees.—(*v. v.*)

Distrib. Australia, New Zealand, Pacific Islands, Malay Islands. (Cultivated in England.)

A very common and variable plant.—*Rhizome* stout, creeping, generally quite glaucous, partially scaly, sometimes thickly covered with membranous paleæ. *Fronds* numerous, 3 inches to 1½ foot long, coriaceous, perfectly smooth, shining, with a thickened margin; some entire, lanceolate, acute, others broader and pinnatifid; *pinnules* close or distant, narrow-linear or broadly oblong; margins thickened, blunt or acute. *Sori* numerous, large, globose or oblong, partially sunk in the frond. *Costa* very stout and prominent. *Stipes* stout, scarcely winged above, obscurely jointed on to the rhizome.

Gen. XIX. GRAMMITIS, *Sw.*

Sori medio venulæ affixi, oblongi v. lineares, uniseriales (in sp. Tasmaniæ), costæ obliqui, nudi. *Venæ* simplices v. furcatæ, immersæ, liberæ.—Rhizoma *repens, squamosum, breve v. elongatum.* Frondes *cæspitosæ, coriaceæ;* venis *immersis, inconspicuis.*

Rhizome creeping, often short, scaly. *Fronds* densely crowded, ¼ inch to a foot long, quite glabrous, rarely

pubescent, sometimes pilose or ciliated, erect, very coriaceous, linear-lanceolate or obovate-lanceolate, blunt, or narrowed at the point, quite entire, narrowed into a short winged or margined stipes. *Sori* oblong or linear, oblique, in one series on each side the obscure costa, in small varieties becoming confluent into a mass. *Veins* wholly immersed, forked, free. (Name from γραμμη, *a line;* in allusion to the linear sorus.)

1. **Grammitis australis** (Br. Prodr. 146); rhizomate repente squamoso, frondibus dense cæspitosis erectis linearibus lineari- v. obovato-lanceolatis integerrimis obtusis subacutisve glaberrimis rarius ciliatis hirsutis pilosisve basi in stipitem brevem angustatis, soris linearibus oblongisve (exemplaribus parvis confluentibus).—*Fl. Antarct.* i. 111. G. Billardieri, *Willd. Sp. Plant.* v. 139; *Fl. N. Zeal.* ii. 44. G. ciliata, *Col. in Tasm. Phil. Journ.* G. scolopendrina, *Bory, in Duperrey Voy. p.* 257. *t.* 30. *f.* 1. (*Gunn,* 12, 1545, 1546.)

Hab. Abundant on damp rocks and trunks of trees throughout the Island, ascending to 4500 feet.—(*v. v.*)

Distrib. South-eastern Australia and New Zealand, Fuegia, and the Falkland Islands.

This is an extremely variable Fern, often ciliated with caducous hairs, especially on the stipes. Alpine specimens form dense Moss-like patches of small, obovate, coriaceous, blunt fronds, ½ inch high, with confluent sori towards the apex. In dry rocky places, again, it assumes the form of a very narrow, rigid, wiry frond. The scales on the rhizome also vary extremely in length and colour.

Gen. XX. GYMNOGRAMMA, *Desv.*

Sori nudi, lineares, dorso venarum venularumque siti, demum confluentes. *Venæ* furcatæ, liberæ.—Rhizoma *brevissimum v. nullum.* Frondes *cæspitosæ, pinnatæ v. bi-tripinnatæ.*

Principally tropical Ferns, with (rarely simple) pinnate, bi-tripinnate, tufted fronds, having no rhizome or a very short one.—*Sori* naked, linear, occupying the veins and venules, hence often running in lines and forking; also covering the spaces between the veins, and then becoming confluent. (Name from γυμνος, *naked*, and γραμμη, *a line;* in allusion to the linear sorus, which has no indusium.)

1. **Gymnogramma rutæfolia** (Hook. et Grev. Ic. Fil. t. 90); frondibus cæspitosis erectis pinnatis villosis, pinnis alternis remotis cuneatis flabellatisve inciso-crenatis lobatis dentatisve.—*Hook. Ic. Plant. t.* 935; *Fil. Exot. t.* 5; *Fl. N. Zeal.* ii. 45. G. Hispanica, *Cosson, in Ann. Sc. Nat. et Notice sur Plantes rares du Midi et de l'Espagne.* G. subglandulosa, *Hook. et Grev. Ic. Fil. t.* 9. Grammitis rutæfolia, *Br. Prodr.* 146. Pleurosorus rutæfolius *et* P. cuneatus, *Fée, Gen. Fil. p.* 180. (*Gunn,* 44, 1547.)

Hab. Common in shaded, dry, stony places.—(*v. v.*)

Distrib. Australia, New Zealand, Pyrenees of Northern Spain.

This little plant is abundant in extratropical Australia and Tasmania, and has also been gathered in the Pyrenees, but I know of no other countries which it inhabits.—*Fronds* densely tufted, 3–5 inches long, villous, often glandular, pinnate; *roots* of numerous tufted fibres. *Pinnæ* 2–5 lines long, alternate, distant, shortly stipitate, cuneate or flabellate, more or less incised or lobed, rarely quite entire. *Sori* linear, scattered, often confluent.

2. **Gymnogramma leptophylla** (Desv. Journ. Bot. 1813. t. 26); tenella, glaberrima, fragilis, frondibus cæspitosis oblongo-lanceolatis bi-tripinnatifidis, pinnis membranaceis obovato-cuneatis bi-trifidis lobatisve, lobis obtusis, costa flexuosa, rachi marginata inferne nuda stipiteque nitida antice sulcata, soris confluentibus.—*Hook. et Grev. Ic. Fil. t.* 25; *Fl. N. Zeal.* ii. 45. Grammitis leptophylla, *Swartz, Syn. Fil. pp.* 23 *et* 218. *t.* 1. *f.* 6.

Hab. Spring Bay, in a cave near the Tamar River, *Gunn.*

Distrib. East and West Australia, New Zealand, North and South Africa, extratropical South America, the Himalaya Mountains, and shores of the Mediterranean, Jersey.

This beautiful little Fern is remarkable for its wide geographical distribution in the northern hemisphere.—*Fronds* an inch to a span high, perfectly glabrous, membranous and shining, pale-green, oblong-lanceolate, bi-tripinnatifid. *Pinnules* 2–4 lines long, obovate-cuneate, twice or thrice lobed or crenate, the lobes blunt. *Partial rachis* winged. *Stipes* and *main rachis* usually red-brown, brittle, shining, grooved in front.

Tribe V. Schizæeæ.—*Sori arranged in imbricated spikes, or on resupinate divisions of the frond. Capsules sessile, striated at the apex (the horizontal ring being terminal).*

Gen. XXI. SCHIZÆA, *Sm.*

Capsulæ ovoideæ, basi insertæ, reticulatæ, apice striatæ, secus lacinias lineares incurvas frondis resupinatæ biseriatim insertæ. *Indusium* nullum v. e margine laciniarum inflexa formatum.—Rhizoma *repens, breve, squamosum.* Frondes *cæspitosæ, erectæ, simplices v. dichotome ramosæ, filiformes, sulcatæ, sæpius cristam terminalem profunde pinnatifidam gerentes;* pinnis *linearibus, conniventibus, pagina superiore soriferis.*

A very curious genus, rare in the north-temperate zone, common in the south-temperate and tropics. The species have erect, generally simple, sometimes dichotomously or flabellately branched, linear, flattened or filiform fronds, which bear at their apices a small, inclined, pinnatifid limb or comb, upon whose divisions the capsules are arranged.—*Capsules* in two series, close together on each side of the costa of each division, partially covered by the incurved margin, ovoid, sessile by the broad end, reticulated, striated at the smaller end, bursting laterally. *Spores* with rounded angles.—The fructification deceptively appears borne on the upper surface of the frond in this genus, the upper portion of the latter being resupinate; the groove of the stipes, which indicates the true upper surface, will be found on the opposite side from the capsules. (Name from σχιζω, *to divide;* from the split frond.)

1. **Schizæa bifida** (Sw. Fil. 151); frondibus simplicibus dichotomisve asperulis subsemiteretibus, pinnis 8–16-jugis margine lacero-crinitis.—*Br. Prodr.* 162; *Schnizlein, Icon. t.* 24; *Fl. N. Zeal.* ii. 47. S. fistulosa, *Lab. Fl. Nov. Holl.* ii. 103. *t.* 250. *f.* 3. S. australis, *Gaud. Ann. Sc. Nat.* 1825. *p.* 98. (*Gunn,* 55.)

Hab. Heathy places: near Georgetown, *Gunn.*—(*v. v.*)

Distrib. Australia, New Zealand, East Indies, tropical America, Antarctic Islands.

Rhizome short, stout, subterranean, thickly covered with red-brown paleaceous hairs. *Fronds* numerous, tufted, wiry, erect, rough to the touch, a few inches to 1½ foot long, simple or once branched, semiterete, grooved on one side. *Comb* or appendix reclined, of eight to ten pairs of pinnæ, with laciniate-crinite edges.—The *S. australis* of Auckland Island seems to be a small variety of this species.

Tribe VI. Osmundaceæ.—*Sori naked. Capsules stalked, with a broad, dorsal, incomplete ring, bursting vertically.*

Gen. XXII. TODEA, *Willd.*

Capsulæ pedicellatæ, globosæ, nudæ, annulo dorsali brevi lato, superficie inferiore frondis sparsæ, venis simplicibus furcatisve insidentes. *Sporæ* ovoideæ.—Frondes *fasciculatæ, coriaceæ.*

The only Tasmanian species of *Todea* is a tall, handsome, tufted Fern, with glabrous, bipinnate, coriaceous fronds, the lower pinnæ on each division of which are generally densely covered with large, crowded, pale-brown

sporangia.—*Pinnules* linear-oblong, serrate, blunt. *Capsules* large. (Named in honour of *Henry Julius Tode*, of Mecklenburg, an eminent Mycologist.)

1. **Todea Africana** (Willd. in Schrift. Acad. zu Erfurt, p. 14. t. 3. f. 1); frondibus bipinnatis coriaceis glabris, pinnulis confluentibus serratis inferioribus fructiferis.—*Swartz, Syn. Fil.* 162; *Hook. Gen. Fil. t.* 46 *B*; *Fl. N. Zeal.* ii. 48 *et* 338. Osmunda barbata, *Br. Prodr.* 163. O. barbara, *Thunb. Prodr.* 171. (*Gunn*, 14, 1549.) (Tab. CLXVIII.)

Hab. Fringeing the banks of the Yorktown rivulet; abundant; scarce elsewhere, *Gunn*; Recherche Bay, *Oldfield*.—(*v. v.*)

Distrib. New South Wales, Victoria, New Zealand, South Africa. (Cultivated in England.)

A noble Fern, with a caudex at times 5 feet high and 6–9 in circumference. *Fronds* sometimes 8½ feet long. —Plate CLXVIII. Fig. 1, capsules; 2, spores:—*magnified*.

Tribe VII. Ophioglosseæ.—*Sori in stalked spikes or panicles. Capsules sessile, without a ring, globose, coriaceous, bursting transversely into two valves.*

Gen. XXIII. OPHIOGLOSSUM, *L.*

Capsulæ sessiles, globosæ, in spicam elongatam distiche biseriatim coadunatæ, coriaceæ, rima transversa dehiscentes. *Sporæ* minutissimæ, globoso-trigonæ.—Radix *e fibris carnosis.* Frons *simplex, erecta,* folium *solitarium* (*rarius* 2) *simplex reticulatim nervosum gerens, in spicam elongatam pedunculatam desinens.*

A very curious genus, found in almost all latitudes to which Ferns extend. Upwards of thirty species have been made of it, many of which do not differ even as varieties from the common *O. vulgatum* of Europe, and most of them may, I think, be safely referred to that plant.—*Root* of long fleshy fibres, sometimes descending from a thickened base of the frond or tuberous rhizome. *Frond* simple, erect, 1 inch to a foot long, bearing one (rarely two) coriaceous, simple, linear or lanceolate or ovate, opaque or translucent leaf, with reticulate venation. *Fructification* a long flattened spike, which is shorter or longer than the leaf, and consists of two opposite rows, each of six to thirty globose capsules, cohering together and to a central axis, each bursting transversely. *Spores* very minute, rounded and trigonous. (Name from οφις, *a serpent*, and γλωσσα, *a tongue*.)

1. **Ophioglossum vulgatum** (L.).

Var. *β. costatum*; fronde ovata v. lanceolata reticulatim venosa costata v. ecostata.—*Fl. N. Zeal.* ii. 50. O. costatum, *Br. Prodr.* 163. (*Gunn*, 1552.) (Tab. CLXIX. *A.*)

Hab. Var. *β*. Common amongst grass: Formosa, *Gunn*.—(*v. v.*)

Distrib. Australia, New Zealand, and many other both tropical and temperate parts of the globe.

Plate CLXIX. *A.* Fig. 1, capsules; 2, spores:—*magnified.*

Gen. XXIV. BOTRYCHIUM, *L.*

Capsulæ globosæ, sessiles, distinctæ, in spicam di-trichotome divisam biseriatim dispositæ, rima transversa dehiscentes. *Sporæ* trilobatæ.—Radix *subtuberosa, fibris crassis.* Frons *simplex, erecta, folium solitarium pinnatim v. bi-tripinnatim divisum gerens;* venis *pinnatis radiatisve, simplicibus v. furcatis.* Spica *pedunculata;* pedunculo *e basi folii orto.*

A genus of few (perhaps only two) species, found in various temperate and tropical countries.—*Root* of very thick, fleshy fibres. *Frond* solitary, 3 inches to 2 feet high, of a very thick texture, consisting of one pinnate or bi-tripinnate or ternately decompound stipitate leaf, and a long, erect peduncle, bearing a deltoid or ovate, pinnate

or trichotomously branched spike of capsules, with unilateral branches. *Pinnules* lobed and crenate, blunt, obscurely veined; *costa*, *stipes*, and *rachis* glabrous or pubescent or woolly. *Capsules* globose, separate from one another, distichously arranged on the branches of the spike, each bursting transversely. *Spores* very minute, three-lobed, or of three connate spheres. (Name βοτρυς, *a cluster;* from the branched clusters of capsules.)

1. **Botrychium Virginianum** (Sw. Syn. Fil. 171); glabrum v. pubescens, scapo subradicali, fronde trichotome divisa, segmentis bipinnatifidis lobatis crenatisque.—*Fl. N. Zeal.* ii. 50. B. australe, *Br. Prodr.* 164. Osmunda ternata, *Thunb. Jap. p.* 329. *t.* 32. (*Gunn*, 30.) (Tab. CLXIX. *B.*)

Hab. Moist shaded places, *Gunn.*—(*v. v.*)

Distrib. South-eastern Australia, New Zealand, Himalaya Mountains, Norway, America.

Frond trichotomous, with pinnatifid or bipinnatifid segments, which are lobed or crenate.—Plate CLXIX. *B.* Fig. 1, capsules; 2, spores:—*magnified.*

2. **Botrychium Lunaria** (Sw. Syn. Fil. 171); glabrum, fronde pinnata, pinnis lunatis.—*Fl. Antarct.* ii. 550; *Eng. Bot. t.* 318; *Hook. Gen. Fil. t.* 47 *A.* (*Gunn*, 29, 1557.)

Hab. Grassy places, meadows, etc.; common, ascending to 4000 feet, *Gunn.*—(*v. v.*)

Distrib. Victoria, Fuegia, and throughout the north-temperate and subarctic zones. (A native of Britain.)

A smaller plant than *B. Virginianum*, with a simply pinnate frond of rounded, rhomboid, or lunate pinnæ, with radiating veins.

Nat. Ord. II. LYCOPODIACEÆ, *DC.*

Gen. I. PHYLLOGLOSSUM, *Kunze.*

Capsulæ in spicam bracteatam pedunculatam dispositæ, axillis bractearum sessiles, reniformes, 2-loculares, 2-valves, rima verticali transverse dehiscentes, sporis minutissimis trigonis farctæ.—Folia *omnia radicalia, pauca lineari-subulata, teretia.* Radix *tuberosa;* tuberibus *didymis*, Orchideis *referentibus.*

A very remarkable plant, discovered almost contemporaneously by M. Preiss at Swan River, Mr. Gunn in Tasmania, and by myself in New Zealand.—Whole plant quite glabrous, rather fleshy, 1–3 inches high. *Root* of two ovoid tubers, quite like that of an *Orchis*, with long simple fibres from the crown. *Leaves* few, terete, subulate, grass-green, erect, rising from the tubers of the present year. *Stem*, *scape*, or *peduncle* solitary, erect, terete, rising from among the leaves, bearing a small terete spike of imbricating, trigonous, pedicelled scales. *Capsules*, like those of *Lycopodium*, placed in the axils of the scales. (Name from φυλλον, *a leaf*, and γλωσσα, *a tongue.*)

1. **Phylloglossum Drummondii** (Kunze in Bot. Zeit. 724, cum ic. xylog.). *Hook. Ic. Plant. t.* 908; *Fl. N. Zeal.* ii. 51. Lycopodium Sanguisorba, *Spring, Monog. Lycop. pt.* 2. *p.* 36. (*Gunn*, 1560.)

Hab. Georgetown, *Gunn.*—(*v. v.*)

Distrib. South-western Australia, New Zealand.

Gen. II. TMESIPTERIS, *Bernh.*

Capsulæ solitariæ ad axillam folii furcati sessiles, oblongæ, coriaceæ, bilobæ, lobis divaricatis subacutis, bivalves, rima verticali dehiscentes. *Sporæ* minutissimæ, oblongæ, curvæ.—Frons *pendula, coriacea, foliosa.* Stipes *angulatus.* Folia *alterna, verticalia, plana, costata, enervia, obtusa, mucronata, basi decurrentia, fertilia stipitata biloba (seu didyma).*

A remarkable genus, containing only one species.—*Fronds* leafy, pendulous, flaccid, elongated, simple or dichotomously branched, 6 inches to 2 feet long. *Stipes* angled. *Leaves* vertical, decurrent, oblong or ensiform,

sessile by a broad base, acuminate, blunt or truncate and retuse, with an exserted costa, opaque, coriaceous, ½–1 inch long. *Fertile pinnæ* didymous, stipitate. *Capsule* large, oblong, two-lobed, the lobes divaricating, splitting into two valves through both lobes, placed at the forking of a pinnule. *Spores* very minute, oblong, curved.—Two species have been made of this plant, one for the truncate-leaved, and the other for the acuminate-leaved, but both forms may be found on one specimen. (Name from τμησις, *a notch*, and πτερις, *a Fern;* from the split pinnules.)

1. **Tmesipteris Forsteri** (Endl. Prodr. Fl. Ins. Norf. 6).—*Spring, Monog. Lycop. p.* 265. T. Tannensis, *Lab. Fl. Nov. Holl.* ii. *p.* 105. *t.* 252; *Bernh. in Schrad. Journ.* 1801, *p.* 131. *t.* 2. *f.* 5; *Fl. N. Zeal.* ii. 51. Psilotum truncatum, *Br. Prodr.* 164. T. Billardieri, *Spring, Monog. l. c.* (*Gunn,* 1553.)

HAB. Not uncommon, hanging from trunks of tree-ferns, rocks, etc.—(*v. v.*)

DISTRIB. Victoria, New South Wales, New Zealand, Pacific Islands, California.

Gen. III. LYCOPODIUM, *L.*

Capsulæ sessiles, axillares, uniloculares, reniformes, rima longitudinali dehiscentes, bivalves, sporis minutissimis trigonis linea tricruri notatis repletæ.—Frondes *coriaceæ, plerumque foliosæ, erectæ, volubiles v. pendulæ.* Capsulæ *in spicam imbricatam dispositæ v. foliis axillares.*

A large genus, whose species are generally very widely diffused, several being found in most climates and latitudes. The genus has been monographed by M. Spring in the fifteenth and twenty-fourth volumes of the 'Memoirs of the Brussels Academy.'—*Fronds* erect from a creeping rhizome, climbing or pendulous, leafy. *Leaves* small, distichous, trifarious, quadrifarious, or imbricated. *Capsules* in sessile or peduncled, terete, angled, or square spikes, or sessile in the axils of the leaves, kidney-shaped, sessile, one-celled, bursting longitudinally all round, and full of minute trigonous spores, each marked with three diverging lines. (Name from λυκος, *a wolf*, and πους, *a foot;* from some fancied resemblance.)

§ a. SELAGO.—*Leaves imbricated all round the stem. Capsules axillary in the upper leaves or in the bracts of terminal, sessile, quadrifarious spikes.*

1. **Lycopodium Selago** (Linn. Sp. Pl. 1565); erectum v. basi decumbens, caulibus cæspitosis ramosis strictis brevibus subcylindraceis obtusis (nunc proliferis), foliis parvis arcte imbricatis erectis (rarius squarroso-patentibus) subulato-lanceolatis acuminatis acutisve, capsulis axillaribus.—*Eng. Bot. t.* 233; *Fl. Antarct. p.* 394; *Fl. N. Zeal.* ii. 52; *Spring, Monog. p.* 19. (TAB. CLXX. *A.*)

HAB. Mount Wellington, in bogs.—(*v. v.*)

DISTRIB. Temperate and alpine regions in all parts of the world. (Native of Britain.)

This is a very widely diffused plant, always growing in moorlands or open boggy grounds, often on mountains. —*Stems* stout, rigid, tufted, branched or simple, often decumbent at the base, erect, cylindrical, 4–8 inches high, blunt, $\frac{1}{4}$–$\frac{1}{3}$ inch diameter. *Leaves* closely imbricated up and round the whole stem, rarely spreading, broadly subulate or lanceolate-subulate, acute or acuminate, 2 lines long. *Capsules* sessile amongst the upper leaves.—PLATE CLXX. *A.* Fig. 1, leaf and capsule:—*magnified.*

2. **Lycopodium varium** (Br. Prodr. 164); caule robusto ramoso basi decumbente dein erecto folioso, foliis decurrentibus linearibus obtusis acutisve arcte imbricatis squarroso-patentibusve, spicis robustis cernuis simplicibus v. parce dichotome ramosis, squamis brevibus obtusis rariusve foliaceis.—*Spring, Monog. p.* 57, *et pt.* 2. *p.* 24; *Fl. Antarct. p.* 115; *Fl. N. Zeal.* ii. 52; *Hook. et Grev. Ic. Fil. t.* 112. (*Gunn,* 52, 1554.) (TAB. CLXX. *B–F.*)

HAB. Abundant on the ground and trunks of trees in the forests.—(*v. v.*)

DISTRIB. New South Wales and Victoria, New Zealand, Pacific Islands, South Africa.

A common plant, of which several varieties occur: of these, one with weaker stems passes into *L. Billardieri,*

Spring, of New Zealand, and another, with shorter, smaller, more subulate leaves, and axillary capsules, passes into *L. Selago*. In the 'Flora Antarctica' I have hazarded the opinion that this, and very many other species of the *Selago* group, are mere varieties of *L. Selago* itself, strangely altered by locality and climate. In its ordinary state *L. varium* may be recognized by its stout, erect stem (6–18 inches high) and branches, patent or generally imbricated, decurrent, linear, coriaceous, blunt leaves, and stout, drooping, tetragonous spikes of capsules, with short, ovate, keeled, blunt, imbricating scales: these scales however often become foliaceous (in var. *umbrosum*, Br.), when the spicate character is lost. When the leaves become more subulate and smaller, the plant appears to pass into *L. Selago*. When it inhabits warmer latitudes it grows dependent from trees, is much branched, more slender and flaccid, and becomes *L. Billardieri*. I cannot distinguish this species from the *L. gnidioides* of South Africa and the Mauritius by any character of importance.—PLATE CLXX. *B–F.* Forms of *L. varium*, showing the passage to *L. Selago* (Fig. A).

§ b. *Leaves imbricated all round the stem. Spikes cylindrical, sessile.*

3. **Lycopodium densum** (Lab. Fl. Nov. Holl. ii. p. 104. t. 251. f. 1); caule erecto superne fastigiatim ramosissimo, foliis sex-multifariam imbricatis erectis et appressis v. patulis et squarrosis subulato-lanceolatis integris longe acuminatis piliferisve, spicis terminalibus solitariis sessilibus ramulis latioribus oblongo-cylindraceis squarrosis, squamis scariosis triangulari-ovatis, sporis hispidis.—*Br. Prodr.* 165; *Spring, Monog. p.* 87; *Fl. N. Zeal.* ii. 53. (*Gunn*, 49, 323, 1556.)

HAB. Abundant in heathy places, etc., throughout the Island.—(*v. v.*)

DISTRIB. Victoria and New South Wales, New Zealand, Pacific Islands.

A very handsome plant, which, though variable in foliage, cannot be confounded with any other.—*Stems* prostrate below, then tall, erect, rigid, woody, stiff, 1–3 feet high, copiously fastigiately branched; branches rarely spreading and lax, densely covered with squarrose, spreading or closely imbricated, appressed, subulate, acuminate, rarely hair-pointed leaves: the character of the branches depends on the form and disposition of the leaves, which are sometimes short, erect, closely appressed, sexfariously imbricated, when the branches are slender; when the leaves are spreading and incurved, the branches appear stouter. *Spikes* cylindrical, $\frac{1}{2}$–$\frac{3}{4}$ inch long, sessile, blunt, squarrose from the spreading, scarious, yellow scales, which are peltate, triangular, serrulate or erose. The *spores* are hispid with short blunt projections.

4. **Lycopodium laterale** (Br. Prodr. 165); caulibus repentibus, ramis ascendentibus erectisve et elongatis foliosis simplicibus v. divisis, foliis undique imbricatis squarroso-patentibus incurvis anguste subulatis integris, spicis brevibus lateralibus cylindraceis, squamis subquadrifariam imbricatis late triangulari-ovatis coriaceis.—*Lab. Sert. Aust. Caled. p.* 10. *t.* 15; *Spring, Monog. p.* 82; *Fl. N. Zeal.* ii. 53. (*Gunn*, 57.)

Var. *β. diffusum*; caulibus diffusis prostratis, ramis ascendentibus.—L. diffusum, *Br. Prodr. l. c.* (*Gunn*, 1558.)

HAB. Var. *a.* Rocky Cape, *Gunn.* Var. *β.* Alpine bogs, common.—(*v. v.*)

DISTRIB. Victoria, New South Wales, New Zealand, Pacific Islands.

A variable plant in habit.—*Stems* procumbent, sparingly branched below; *branches* slender, erect, simple or sparingly divided, 3 inches to a span tall, covered with patent, flexuous, squarrose, narrow subulate leaves, which are $\frac{1}{3}$ inch long. *Spikes* axillary, sessile, erect, $\frac{1}{2}$ inch long. *Scales* quadrifarious, coriaceous, very broadly ovate or rounded, suddenly contracted to a rather long stiff point; margin scarious, white, very narrow.—In alpine places this plant becomes procumbent, shorter, stiffer, and with broader, shorter leaves; such specimens appear to me to be *L. diffusum*, Br.

§ c. *Leaves imbricated all round the stem (sometimes obscurely secund or bifarious). Spikes peduncled.*

5. **Lycopodium Carolinianum** (Linn. Sp. Pl. 1567); caule repente radicante, foliis ascendentibus

curvis lanceolato-subulatis, pedunculis lateralibus strictis erectis elongatis foliosis, spica elongata stricta solitaria, squamis peltatis sub-6-fariam imbricatis erecto-patentibus e basi late ovata longe acuminatis margine scariosis serrulatis integrisve.—*Dill. Musc. t.* 62. *f.* 6; *Spring, Monog. p.* 98; *Fl. N. Zeal.* ii. 53. L. Drummondii, *Spring, Monog. pt.* 2. *p.* 35. L. serpentinum?, *Kunze, in Plant. Preiss.* ii. 108. (*Gunn,* 4.)

HAB. Boggy places; not uncommon.—(*v. v.*)

DISTRIB. Victoria, Swan River, New South Wales, New Zealand, South Africa, and many subtropical and temperate parts of the globe.

Stems creeping, rooting, 3–5 inches long, covered with curved, ascending, lanceolate-subulate leaves, $\frac{1}{8}$ inch long and upwards. *Peduncle* erect, stiff, 1–4 inches long, covered with small, erect, subulate leaves. *Spike* 1–2 inches long, erect, cylindrical. *Scales* peltate, arranged in about six rows, stiff, spreading, broadly ovate below, with long rigid points, and scarious, more or less toothed margins, being sometimes nearly entire.—The leaves appear to be bifarious in some specimens from South Africa and South America.

6. **Lycopodium clavatum** (L.), var. *Magellanicum;* caule vage repente elongato, ramis erectis fastigiatim ramulosis, foliis lineari-subulatis squarroso-incurvis patentibusve integerrimis, pedunculis terminalibus solitariis geminisve strictis erectis sparse foliosis, spicis elongatis cylindraceis, squamis peltatis e basi trapezoidea subulato-acuminatis recurvis margine scariosis denticulatis, sporis granulatis.—*Fl. Antarct. p.* 113; *Fl. N. Zeal.* ii. 54. L. Magellanicum, *Swartz, Syn. Fil.* 180; *Spring, Monog. pt.* 2. *pp.* 97, 16. L. fastigiatum, *Br. Prodr.* 165; *Spring, Monog. pt.* 1. *p.* 88, *pt.* 2. *p.* 41. L. Pichinchense, *Hook. Ic. Pl. t.* 85. L. heterophyllum, *Hook. et Grev. Ic. Fil. t.* 113. L. diffusum, *Spring, Monog., non Br. Prodr.* (*Gunn,* 48, 56, 1557.)

HAB. Moist boggy subalpine places; abundant.—(*v. v.*)

DISTRIB. Victoria, New Zealand, and the Antarctic Islands, Cordillera of South America, and cooler regions of the Pacific Islands.

In the 'Flora Antarctica' I have discussed at some length the variations of *L. clavatum,* of which I believe this plant to be a southern state, distinguishable in most cases by the quite entire leaves, that have not a hair-like point. In the South Sea Islands and the Cordillera of South America it is found passing into the *L. clavatum* of the north-temperate hemisphere, a cosmopolitan plant.—*Stems* extensively creeping, stout, woody, sending up strict, erect, fastigiately branched or panicled branches, 3–12 inches high. *Leaves* imbricated, spreading, incurved or squarrose, linear-subulate, entire. *Peduncles* terminal, solitary or two together, strict, erect, more or less leafy, the leaves often whorled. *Spikes* 1–$2\frac{1}{2}$ inches long, erect, cylindric. *Scales* peltate, trapezoid and toothed at the base, with long recurved points. *Spores* granulated on the surface.—Very stunted alpine specimens have procumbent branches and subsecund ascending leaves. I have seen specimens with short peduncles, approaching *L. densum* in general appearance, but the form of the recurved scales of the spike distinguishes this at once.

§ d. *Leaves bifarious.*

7. **Lycopodium scariosum** (Forst. Prodr. n. 48); caule basi repente vage ramoso, ramis subcomplanatis divaricatim ramulosis, foliis aliis majoribus bifariis decurrentibus integerrimis falcato-lanceolatis acutis coriaceis opacis marginibusve et apicibus scariosis aliis minoribus cauli appressis subulatis stipulæformibus, spicis terminalibus longe v. brevissime pedunculatis subsexfariam imbricatis pedunculo folioso, squamis e basi ovata acuminatis denticulatis erectis demum recurvis apicibus sæpe scariosis, sporis laxe reticulatim areolatis, areolis depressis.—*Fl. Antarct. p.* 112; *Hook. Ic. Plant. t.* 966; *Spring, Monog. p.* 106; *Fl. N. Zeal.* ii. 55. L. decurrens, *Br. Prodr. p.* 165. L. Jussieui, *Desv. Encycl. Bot.; Hook. Ic. Plant. t.* 185; *Spring, l. c. p.* 108. L. Hænkii, *Presl.* (*Gunn,* 50.)

Hab. Common in boggy places on the mountains.—(*v. v.*)

Distrib. Alps of Victoria, New Zealand, Lord Auckland's Group, etc.; alps of South America to Fuegia.

Stems creeping, stout, rooting, often 2 feet long, sending out flattened, flabellately-divided, compressed branches. *Leaves* of two kinds; the larger bifarious, decurrent, falcate, ovate-lanceolate, acute or acuminate, laterally flattened, very coriaceous; smaller on the under side of the branches only, more numerous, subulate, appressed to the stem. *Spikes* 1–2½ inches long, cylindrical, solitary or geminate, on long or short terminal peduncles, which are often 8 inches long, and covered with imbricate, subulate leaves. *Scales* somewhat sexfariously disposed, ovate, with rather broad recurved points and toothed margins.

Gen. IV. SELAGINELLA, *Beauv.*

Capsulæ biformes, sessiles, uniloculares; aliæ reniformes, rima longitudinali dehiscentes, bivalves, sporis minutissimis trigonis linea tricruri notatis repletæ; aliæ 2–3-lobæ, 2–3-valves, corpusculis 1–6 farctæ.—Frondes *herbaceæ, complanatæ, distiche v. bifariam ramosæ;* folia *quadrifaria, lateralia patula verticalia, antica et postica sæpe stipulæformia, cauli appressa;* spicis *terminalibus,* 4-*fariis.*

1. **Selaginella uliginosa** (Spring, Monog. Lycop. ii. 60); caule erecto, ramis erecto-patentibus bifariis suboppositis, foliis parvis confertis 4-fariis uniformibus patentibus ovatis acuminatis integerrimis subcarinatis basi subtortis, amentis 4-angularibus sessilibus.—Lycopodium uliginosum, *Lab. Fl. Nov. Holl.* ii. 104. *t.* 251. *f.* 2; *Br. Prodr.* 165; *Gaud. in Freyc. Voy. Bot.* 284. (*Gunn,* 51, 1559.)

Hab. Probably common in marshy places: Hobarton, Georgetown, etc.—(*v. v.*)

Distrib. New South Wales and Victoria.

S. uliginosa is a small, distichously or bifariously branched, slender plant, 2–4 inches high, with small quadrifarious leaves, those on the upper and under face of the branches appressed, the lateral spreading, all ovate-acuminate, quite entire. *Spikes* sessile at the apices of the branches, tetragonous.—A very large tropical genus of *Lycopodiaceæ,* of which no species has hitherto been found in New Zealand, and very few in Australia.

Gen. V. ISOETES, *L.*

1. **Isoetes,** sp.? (*Gunn,* 1563.)

Hab. At the bottom of alpine lakes; abundant.

My specimens, being in an immature state and barren, are not capable of satisfactory determination. They may belong to *I. lacustris* of Europe, a plant of wide distribution, but the leaves are more rigid, short, and blunt.—A perennial submerged plant, growing in dense tufts. *Leaves* narrow-linear or subulate, cellular, 2–6 inches long, enlarged at the base where the capsules are inserted. *Capsules* usually of two kinds, those of the outer leaves with large grains cohering originally in fours, those of the inner filled with very minute spores.

Nat. Ord. III. MARSILEACEÆ, *Br.*

Gen. I. AZOLLA, *Lam.*

1. **Azolla rubra** (Br. Prodr. 167). (*Gunn,* 438.)

Hab. Floating on the surface of marshes and ponds: Circular Head, etc.—(*v. v.*)

Distrib. A native of Australia, Tasmania, New Zealand, South America, and probably many other parts of the world.

A pretty, small water-plant, of a vinous-red or red-purple colour, subtriangular in outline, 1–2 inches long,

easily recognized by its floating habit, closely distichously-branched stem, and minute imbricating leaves. The fructification forms small globular masses on the under surface of the frond.

Gen. II. PILULARIA, *L.*

1. **Pilularia globulifera** (Linn. Sp. Pl.).—*Engl. Bot. t.* 521. (*Gunn,* 1561.)

HAB. Marshy ground near Penquite, *Gunn,* and probably common elsewhere, but easily overlooked.

DISTRIB. Swan River, Europe, North Africa. (A native of England.)

Dr. Valentine, who has examined this plant in Tasmania, says that it might be distinguished from the European by the curved pedicels and pendulous capsules, but I find precisely similar states in English specimens. In Swan River specimens of *P. globulifera* the capsules are placed as in the European plant.—*Rhizome* slender, creeping, often submerged, rooting at the nodes. *Leaves* capillary, 2–4 inches high, bright-green. *Capsules* like pills, sessile or shortly peduncled, 2 lines in diameter, covered with hairs, four-celled, four-valved at the top, containing spores of two sorts, one large, the other very minute.

NAT. ORD. IV. CHARACEÆ.

The *Characeæ* are all fresh-water plants (very rarely inhabiting brackish water), often forming densely matted patches. They are leafless, with whorled branches, and minute axillary fructification. There are probably very many Tasmanian species, but they are difficult of investigation. The following enumeration of the known Tasmanian species is by Professor Alexander Braun, of Berlin, who is preparing a work on the Order; the descriptions of several have not, I believe, been published. In an able paper on the Australian and Antarctic *Charæ,* by Professor A. Braun, of Berlin, in Hooker's 'London Journal of Botany,' 1849, that learned author remarks that in Australia the greatest number of species are diœcious, whilst in Europe the contrary is the case; as also that all the true *Charæ* of Australia belong to the division *Haplostephaneæ,* while in other parts of the world the division *Diplostephaneæ* prevails, which latter seems to be entirely absent in Australia.

Gen. I. CHARA, *L.*

1. **Chara gymnopitys** (A. Braun).

HAB. Derwent River, rivulets at Launceston, etc. (*Gunn,* 1573, 1568, 1568?)

2. **Chara myriophylla** (F. Mueller).

HAB. Ponds at Georgetown; shallow muddy water, Lake St. Clair. (*Gunn,* 1568, 1572.)

3. **Chara australis** (Br. Prodr. 346).—*Braun, in Linnæa,* xvii. 117; *Plant. Preiss.* ii. 148; *Hook. Lond. Journ. Bot.* i. 201.

HAB. South Esk River, near Launceston. (*Gunn,* 1565, 1000.)

DISTRIB. Swan River, Victoria, New South Wales, New Zealand.

4. **Chara leptopitys** (A. Braun).

HAB. Mixed with *Triglochin;* Georgetown, near the sea, in places dry in summer. (*Gunn,* 1568, 1569.)

5. **Chara Hookeri** (A. Braun, in Hook. Lond. Journ. Bot. i. 202).—(F. microphylla, *F. Muell.*)

HAB. South Esk River, near Perth. (*Gunn,* 1001.)

6. **Chara mollusca** (A. Braun).

HAB. Lake St. Clair; abundant. (*Gunn,* 1570, 1571.)

7. **Chara fragilis** (Desv.).
HAB. Derwent River, at Glen Leith. (*Gunn*, 1576.)
DISTRIB. Common in Europe and other parts of the world.

8. **Chara macropogon** (A. Braun, in Linnæa, xvii. 116).—*Plant. Preiss.* ii. 147; *Hook. Lond. Journ. Bot.* i. 200.
HAB. Brackish water at Georgetown, with *Ruppia*. (*Gunn*, 1568**.)
DISTRIB. Swan River.

Gen. II. NITELLA, *Ag.*

1. **Nitella glœostachys** (A. Braun, in Hook. Lond. Journ. Bot. i. 196).
HAB. South Esk River. (*Gunn*, 1566.)
DISTRIB. Swan River.

2. **Nitella Hookeri** (A. Braun, l. c. 199).—*Fl. N. Zeal.* ii. 56. Chara australis, *Tayl. in Herb. Hook. etc.*
HAB. Yorktown, Lake St. Clair (with *C. mollusca*). (*Gunn*, 1571, 1567.)
DISTRIB. New Zealand, Kerguelen's Land.

3. **Nitella penicillata** (A. Braun, l. c.).
HAB. Tasmania. (*Gunn*, 1002.)

4. **Nitella diffusa** (A. Braun).
HAB. Distillery Creek, Launceston; rivulet near Penquite. (*Gunn*, 1574.)

5. **Nitella gelatinosa** (A. Braun, l. c.).
HAB. Rivulets near Launceston, St. Patrick's River, etc. (*Gunn*, 1566*, 1557, 1566?)
DISTRIB. Swan River.

6. **Nitella Gunnii** (A. Braun).
HAB. South Esk River. (*Gunn*, 1570*, 1571*, 1575.)

NAT. ORD. V. MUSCI, *Juss.*

By W. Wilson, Esq.

Of the Tasmanian Mosses (about 250) here described, the majority (180) were collected by Mr. Gunn and myself, and have been elaborated by Mr. W. Wilson; the remainder consists of additions to the Tasmanian Flora, chiefly made by my friend W. Archer, Esq., F.L.S., of Cheshunt, and which have been examined and described by Mr. W. Mitten. Mr. Mitten has indeed prepared a paper on Mr. Archer's Mosses, which will be presented to the Linnæan Society of London; and I have to acknowledge my great obligations to him for allowing me to insert his descriptions of the new species here, as well as for some valuable notes on Gunn's Mosses and my own; these I have appended to Mr. Wilson's descriptions as this work was passing through the press.

There are no doubt very many fine Mosses to be discovered in Tasmania, especially on the lofty mountains, and on the damp western and southern coasts. A large proportion will probably prove identical with New Zealand species, and with those of Fuegia and the Antarctic Islands. In the New Zealand Flora upwards of 250 species of Mosses are described by Mr. Wilson, and many have been discovered since, especially by Mr. Knight, raising the number known to upwards of 300.—*J. D. H.*

Suborder 1. ANDRÆACEÆ.

Gen. I. ANDREÆA, *Ehrh.*

Theca in receptaculo exserto sessilis, fere ad basin valvulis quatuor dehiscens; valvulis apice operculo persistente connexis. *Calyptra* mitræformis.

1. **Andreæa petrophila** (Ehrh. Beiträge, i. 192); foliis e basi subvaginante patentibus ovato-acuminatis acutiusculis apice subobliquis dorso papillosis enervibus siccitate appressis.—*Bruch et Schimper, Bryol. Eur. t.* 623. A. rupestris, *Hedw. Sp. M. t.* 7. *f.* 2, *descriptio ex parte, excl. syn.*; *Hook. et Tayl. Musc. Brit.* ii. *t.* 8; *Fl. Antarct. p.* 396; *Fl. N. Zeal. p.* 57.

Hab. On rocks, elev. 1500–3000 feet; Lake Echo, *J. D. H.*; the Falls, Cheshunt, *Archer*. (*Gunn*, 1702.)

Distrib. Europe, and all other temperate parts of the world.

2. **Andreæa montana** (Mitten); "*A. alpinæ* simillima, foliis parte superiore sensim acutis vix acuminatis margine integerrimo, margine partis inferioris minute crenulato, cellulis basi oblongis elongatisque parallelogrammaticis cite in minutas longitudine $\frac{1}{2000}$ latitudine $\frac{1}{4000}$ unciæ metientes transeuntibus."—*Mitten, in Journ. Linn. Soc. ined.* (Tab. CLXXI. Fig. 1.)

Hab. On rocks: rivulet near Cumming's Head, Western Mountains, *Archer*.

"Closely resembling *A. alpina* in size, habit, colour of its leaves, and general appearance, but the outline of its leaves, when compressed, is ovate, slightly acuminate, the cells at the base distinctly parallelogrammatic, and those of the upper portion larger. *A. acutifolia* has much narrower leaves." *Mitten, l. c.*—Plate CLXXI. Fig. 1; 1–3, leaves:—*all magnified.*

3. **Andreæa acuminata** (Mitten); "*A. acutifoliæ* simillima, foliis e basi erecta caulem amplectente patulis apicibus incurvis explanatis ovato-lanceolatis margine partis erectæ minute crenulato dorso apicem versus inconspicue papillosis, cellulis ex apice ad mediam minutis quadrato-rotundatis diametro circiter $\frac{1}{4000}$ unciæ metientibus deinde in oblongas subparallelogrammaticas parietes latitudine superantes inferne in longioribus angustis fuscidulis parietibus crassioribus transeuntibus, perichætialibus ovalibus tenuiter acuminatis convolutis."—*Mitten, l. c.* (Tab. CLXXI. Fig. 2.)

Hab. On rocks: Cheshunt, *Archer*.

"Very nearly allied to *A. acutifolia*, Hook. fil. et Wils. Fl. Antarct. p. 118, but with leaves a little wider, and cells in the upper portion smaller and more numerous, all with much narrower walls, those just below the middle of the leaf with walls narrower than their own width and pellucid. From *A. petrophila* it recedes in the form of its leaves, as well as in their cellular structure already described." *Mitten, l. c.*—Plate CLXXI. Fig. 2; 1, perichætium and capsule; 2, leaves:—*both magnified.*

4. **Andreæa nitida** (Hook. fil. et Wils.); caulibus suberectis laxe cæspitosis parce ramosis, foliis erecto-patentibus ovato-oblongis obtuse apiculatis concavis enerviis nitidis marginibus reflexis, perichætialibus paulo longioribus erectis.—*Fl. Antarct.* i. *p.* 118. *t.* 57. *f.* 3; *Mitten, l. c.*

Hab. On stones: rivulet near Cumming's Head, Western Mountains, *Archer*.

Distrib. Lord Auckland's Islands.

5. **Andreæa subulata** (Harvey); caule subramoso, foliis falcato-secundis subulatis attenuatis basi dilatatis crassinerviis, perichætialibus convolutis.—A. subulata, *Harvey, in Hook. Ic. Plant.* iii. *t.* 201; *Fl. Antarct.* i. 119; *Mitten, l. c.*

Hab. On rocks: Jackey's Plain Creek, and rivulet near Cumming's Head, Western Mountains, *Archer*.

Distrib. Cape of Good Hope, Lord Auckland's Group, and Campbell's Island.

SUBORDER 2. SPHAGNACEÆ.

Gen. II. SPHAGNUM, *L.*

Theca globosa, in receptaculo exserto sessilis, stomate nudo exannulato. *Calyptra* medio rupta, basi persistente. *Fructificatio* axillaris.

1. **Sphagnum cymbifolium** (Dillen. Hist. Musc. t. 32. f. 1); caule robusto elongato, ramis confertis brevibus tumidis, foliis rotundo-ovatis concavis obtusis apice dorso muricatis, utriculis (cellulis ramulorum externis) spiraliter striatis.—*Bridel, Bryol. Univ.* Sphagnum obtusifolium, *Hook. et Tayl. ex parte, var.* condensatum. (*Gunn,* 1.)

HAB. Western Mountains, elev. 3000 feet, in bogs, *Gunn,* 1578; swamp, New Norfolk, *Oldfield,* 62, *J. D. H.;* Cheshunt, *Archer.*

DISTRIB. Europe, and all parts of the world.

2. **Sphagnum compactum** (Brid. Sp. Musc. i. 18, et Bryol. Univ. i. 16); caule robusto, ramis dense approximatis patentibus crassis strictis, foliis rameis imbricatis ovato-oblongis concavis apice subinflexis truncatis denticulatis.—*Nees et Hornsch. Bryol. Germ. t.* 2. *f.* 5.

Var. γ. *ovatum;* foliis brevioribus ovatis subacutis.

HAB. In bogs: Huon River, *Oldfield,* 61.

DISTRIB. Campbell's Island, New Zealand. The ordinary form of the species frequent in Europe and in North America.

The var. γ much resembles *S. cymbifolium,* but the leaves are not muricate at the dorsal apex, and the utricles of the branches are destitute of spiral striæ. *Foliage* of a pale fawn-colour.

3. **Sphagnum australe** (Mitten, in Linn. Journ. ined.); "*S. cymbifolio* simile, caule e seriebus circiter quinque cellularum corticato, foliis brevi-oblongis obtusis margine apicis incurvo erosulo basi calcaratis immarginatis spatiis intercellularibus inanibus, ramulis copiosis patenti-recurvis, cortice cellulis inanibus foliis imbricatis ovatis apice latiusculis obtusis margine ex una serie cellularum angustissimarum apicem versus remote minuteque serrulato spatiis latis longitudine, in folii medio, latitudinem quadruplo superantibus fibris spiris approximatis repletis poris parvis singulis quinisve, ramulis pendulis foliis appressis ovato-lanceolatis obtusis spatiis majoribus poris circiter quinis."—S. compactum, *var.* ovatum, *Hook. fil. et Wils. Fl. Antarct. p.* 122.

HAB. Huon River, *Oldfield.*

DISTRIB. Campbell's Island.

"Very similar to *S. cymbifolium* and to *S. Antarcticum,* but in structure allied only to the latter, from which it recedes in the form of its branch-leaves. *S. compactum* is immediately distinguished from these species by its cortex being composed of a single series of cells."—*Mitten, l. c.*

4. **Sphagnum contortum** (Schultz, Suppl. Fl. Starg. 64); caule elongato rigidiusculo, foliis ovato-lanceolatis imbricatis acutis concavis subcoriaceis. (*Oldfield,* 29.)

Var. 2. *laxum;* ramulis distantibus attenuatis patulis. (*Gunn,* 41.)

Var. 3. *scorpioides;* ramis dense confertis singulis binisve brevibus patentibus sursum curvatis, foliis elongatis apice præmorsis, rameis erectis subsecundis. (*Gunn,* 2.)

Var. 4. *intermedium;* caule humili, ramulis dense confertis attenuatis, foliis laxer eticulatis. (*Gunn,* 3.)

HAB. In bogs. Vars. 1 and 3. Mount Wellington, and the others common.

DISTRIB. Europe.

Var. 4, from the lax texture of the foliage, resembles *S. acutifolium*, but the stem has a single layer of cortical cellules as usual. Var. 3 has a singular aspect, and may perhaps be a distinct species, with purplish foliage.

5. **Sphagnum molliculum** (Mitten, in Linn. Soc. Journ. ined.); "*S. plumoso* simile, caule cortice ex strato unico cellularum formato, foliis subelliptico-ovalibus basi brevissime calcaratis apice rotundatis subtruncatis minute denticulatis spatiis intercellularibus ut plurimum repletis margine e serie triplici cellularum angustissimarum composito, ramulis flaccidis cortice cellulis inanibus foliis ovatis acuminatis marginibus superne incurvis apice cucullato-concavis rotundatis argute denticulatis marginibus ut in caulinis spatiis angustis elongatis spiris repletis poris nullis?"

Hab. Cheshunt, *Archer*.

"Habit intermediate between *S. acutifolium* and *S. plumosum*, but approaching more nearly to the latter."—*Mitten, l. c.*

6. **Sphagnum cymbifolioides** (C. Mueller, Bot. Zeit. 1851, p. 546); "caulis procerus flaccidus, ramis subremotis breviusculis cuspidatis curvatis patentibus vel recurvatis, comalibus erectis brevioribus densiusculis obtuse cuspidatis; folia caulina e basi latissima plana ovalia, apice involutaceo obtuso brevi, haud truncata, e cellulis breviusculis basi laxioribus longioribus, ductibus subheteromorphis præditis, ubique fere repletis reticulata, immarginata, e ceteris rameis similia; ramea ovalia apice haud involuta, erecto-appressa nec falcata nec secunda, summo apice truncato dentibus circiter octo coronato, tenuiter marginata, e cellulis teneris amplis flexuosis valde repletis constructa; cellulæ ramorum inanes."—*Mitten, l. c.*

Hab. Cheshunt, *Archer*.

"The description above quoted, according to Mossman's specimens, is incorrect, for the cauline leaves have a margin of three rows of narrow cells. In this species the cortical cells are in a single stratum, and the leaves of the ramuli have the intercellular spaces with a pore between every turn of the spiral fibre."—*Mitten, l. c.*

7. **Sphagnum confertum** (Mitten, in Journ. Linn. Soc. ined.); "habitu *S. compacti*, ramulis dense confertis breviusculis, caule cortice e serie cellularum triplici formato serie externa fibris repleto, foliis oblongis apice rotundatis suberosulis spatiis intercellularibus superioribus fibris repletis inferioribus inanibus margine nullo, ramulis cortice cellulis inanibus foliis ovatis concavis obtusis apice truncatis denticulatis margine serie unica cellularum angustissimarum superne minutissime serrulato spatiis latiusculis fibris spiris approximatis repletis poris singulis."

Hab. Rivulet near Cumming's Head, Western Mountains, *Archer*.

"Appearance and habit similar to *S. subsecundum*, but the cortical cells disposed in a triple series."—*Mitten, l. c.*

Suborder 3. BRYACEÆ.

Section 1. Acrocarpi.—*Fruit terminal.*

Tribe I. Phasceæ.

Gen. III. PHASCUM, *L.*

Subgenus 1. Ephemerum.—*Plantæ humillimæ; foliis ovali-lanceolatis, plerumque profunde dentatis; areolatione laxa. Capsula immersa. Calyptra campanulata.*

1. **Phascum (Ephemerum) cristatum** (Hook. et Wils.; Icon. Plant. Rar. t. 737 A); monoicum, exiguum, basi filis protothalli instructum; folia spathulato-lanceolata acuminata inciso-dentata, laciniis den-

tato-ciliatis, dorso ciliato-cristata; theca immersa subsessilis ovali-globosa acutiuscula; calyptra campanulata rufo-fusca.—*Mitten, in Journ. Linn. Soc. ined.*

HAB. Cheshunt, *Archer.*

DISTRIB. Swan River.

Subgenus 2. ASTOMUM.—*Plantæ elatiores, cæspitosæ. Folia siccitate crispata; areolatione e cellulis rotundatis, parvis. Capsula pedunculata. Calyptra dimidiata.*

2. **Phascum (Astomum) cylindricum** (Taylor, in Lond. Journ. Bot. 1846, p. 42).—*Mitten, l. c.*

HAB. Cheshunt, *Archer.*

DISTRIB. Swan River.

Capsula elliptica, subrotunda, apiculata (operculo persistente), brevi-pedicellata. *Calyptra* cucullata vel conico-campanulata. *Florescentia* monoica.

Subgenus 3. ACAULON (Bryol. Europæa).—*Gemmæforme, perpusillum, annuum. Capsula globosa, immersa. Calyptra minima, capsulæ vertice insidente.*

3. **Phascum (Acaulon) apiculatum** (Hook. fil. et Wils. Fl. N. Zeal. p. 59. t. 83. f. 1); foliis in bulbillo arcte conniventibus obovato-subrotundis acuminulatis concavis integerrimis nervo valido excurrente apiculatis.

Var. *turgidum;* foliis internis turgide concavis longioribus.—*Mitten, in Journ. Linn. Soc. ined.*

HAB. Cheshunt, *Archer.*

Subgenus 4. PLEURIDIUM.—*Caules tenelli, filiformes, innovationibus annuis continuati (perennes), subramosi. Capsula brevi-pedicellata, erecta, ovata, brevi-apiculata, terminalis vel per innovationes lateralis. Calyptra plerumque cucullata. Vaginula oblongo-cylindrica.*—Fl. N. Zeal. p. 58.

4. **Phascum (Pleuridium) gracilentum** (Mitten); "monoicum, habitu *P. alternifolii,* gracile, foliis inferioribus e basi ovali subulato-lanceolato-acuminatis nervo subulam superiorem totam occupante margine ad basin partis subulati indistincte crenulato vel lævi cellulis inferioribus oblongis parallelogrammaticis superioribus minoribus, perichætialibus thecam non tegentibus patulis anguste ellipticis subulato longe attenuatis canaliculatis apice parce denticulatis integerrimisve laxe areolatis, theca in pedunculo brevi subgloboso leptoderma operculo brevissimo, calyptra cucullata ad thecæ mediam descendente."—*Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXI. Fig. 3.)

HAB. West side of Tower Hill, Cheshunt, *Archer.*

DISTRIB. King George's Sound, New Holland (*Menzies*).

"Excepting that the perichætial leaves are less straight and bristly, in general appearance scarcely different from *P. alternifolium,* but its leaves are of a different form." *Mitten, l. c.*—PLATE CLXXI. Fig. 3; 1, fruiting specimen; 2, cauline, and 3, perichætial leaves; 4, male flower; 5, operculum:—*all magnified.*

5. **Phascum (Pleuridium) tenellum** (Mitten, in Journ. Linn. Soc. ined.); "monoicum, habitu staturaque *P. nitidi,* flore masculo gemmæformi minuto in foliorum caulinorum axillis cellulis foliorum paululum brevioribus firmioribusque."

HAB. Cheshunt, *Archer.*

"When dry, firmer than *P. nitidum,* with which it corresponds very closely, excepting in the male inflorescence, which has been observed on a single individual only. The substance of the leaves is firmer, and the whole plant pale-brown. It appears to be distinct, but requires further examination in living specimens."—*Mitten, l. c.*

Gen. IV. BRUCHIA, *Schwægr.*

Capsula clausa, apophysi instructa. *Flores masculi* terminales, gemmæformes. *Calyptra* subulato-campanulata, basi multifida.—*Schwægr. Suppl.* ii. *p.* 91.

§ 1. Sporledera (Hampe).—*Subacaules; theca subæqualis vel pyriformis.*

1. **Bruchia minuta** (Mitten, in Journ. Linn. Soc. ined.); monoica, perpusilla, brevicaulis, foliis patentibus lanceolatis angustatis nervo percurrente, margine superne serrulato, cellulis laxiusculis, theca suborbiculari-ovata acuta collo sensim attenuato sessili erecta, calyptra apice rugulosa thecæ tertiam partem obtegente, flore masculo gemmæformi." (Tab. CLXXI. Fig. 4.)

Hab. Sides of ditches: Cheshunt, *Archer.*

"Plants very minute, brownish, considerably smaller than *B. brevipes.*—*Leaves*, when dry, appressed. In appearance it resembles the smallest states of *Pleuridium nitidum.*" *Mitten, l. c.*—Plate CLXXI. Fig. 1, fruiting specimen; 2, leaf:—*both magnified.*

Tribe II. Weissiæ.

Gen. V. GYMNOSTOMUM, *Hedw.* (*in parte*).

Peristomium nullum. *Capsula* erecta, ovalis, oblonga vel subrotunda, æqualis. *Annulus* obscurus, persistens. *Operculum* oblique rostratum. *Calyptra* cucullata.—Caules *perennes.* Florescentia *monoica dioicave;* fl. mas. *gemmæformis.*

1. **Gymnostomum calcareum** (Nees et Hornsch. Bryol. Germ. i. 153. t. 10); compacte cæspitulosum, caule ramoso tenerrimo, foliis patulis lineari-lanceolatis obtusiusculis margine planis, capsula ovali-oblonga brevicolla erythrostoma, operculo subulato-conico.—*Bryol. Europ. t.* 32.

Hab. North-west Bay, on rocks. (*Oldfield*, 313.)

Distrib. New Zealand, Europe.

2. **Gymnostomum bicolor?** (Br. et Sch. Bryol. Europ. t. 29).

Hab. On the ground, amongst Lichens and other Mosses. (*Oldfield, with* 327.)

Barren specimens.—*Stems* loosely tufted, slender. *Leaves* distant, widely spreading, recurved, of firmer texture and more opaque than in *G. calcareum*, loosely twisted when dry, at first yellowish, brownish when old, linear, obtusely apiculate, papillose at the back, slightly denticulate at the apex; nerve pellucid; areolæ roundish, minute.

Gen. VI. WEISSIA, *Hedwig.*

Peristomium simplex; *dentes* sedecim, æquidistantes, basi liberi, lanceolati v. lineari-lanceolati, transverse trabeculati, dorso convexi, integri vel pertusi, interdum apice bifidi, siccitate erecti vel patentes. *Capsula* erecta, ovali-oblonga. *Annulus* persistens, vel nullus. *Operculum* oblique rostratum.—Caules *perennes.* Florescentia *monoica dioicave;* fl. mas. *gemmæformis.*

1. **Weissia flavipes** (Hook. fil. et Wils. Fl. N. Zeal. 59. t. 83. f. 2); monoica, cæspitosa, foliis erecto-patentibus siccitate intortis lineari-lanceolatis angustatis margine incurviusculis subplanis costa percurrente mucronulatis, seta elongata luteola, capsula subcylindrica erecta erythrostoma, peristomii dentibus perforatis, operculo tenuirostri.

Hab. Gullies Road, Brown's River, and Deep Gully, on Mount Wellington, *Oldfield*, 265. (*Gunn*, 1617.) South Port, *Stuart.*

DISTRIB. New Zealand.

Closely allied to *W. controversa* (Hedw.), distinguished by its pale-yellow fruit-stalks.—*Leaves* longer and narrower, the margins nearly plane. *Teeth* of the peristome perforated. *Annulus* none.

2. **Weissia controversa** (Hedw.); cæspitosa, foliis lanceolatis lineari-lanceolatisve margine incurvis et involutis costa percursa mucronatis, capsula ovali siccitate substriata, operculo conico-rostellato, peristomii dentibus subintegris lineari-lanceolatis obtusiusculis.—*Hedw. Musc. Frond.; Schwægr.; Hook. et Tayl.; Mitten, in Journ. Linn. Soc. ined.* W. viridula, *Brid. Bryol. Europ.*

HAB. Cheshunt, *Archer.*

DISTRIB. All parts of the world.

3. **Weissia microcarpa** (Hook. fil. et Wils.); monoica, cæspitosa, foliis erecto-patentibus subincurvis siccitate crispulis lineari-lanceolatis carinato-concavis margine subreflexis, perichætialibus subvaginantibus caulinis similibus, seta longiuscula gracili flavescente, capsula minuta ovali erecta, operculo longirostri, peristomii dentibus brevibus apice subbifidis.—Holomitrium cirrhatum, *Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXI. Fig. 5.)

HAB. On rocks and stones: Glen Leith, and on Mount Nelson, *J. D. H.;* Cheshunt, *Archer.*

Closely allied to *W. cirrhata* (Hedw.).—*Capsule* much smaller, oval, scarcely contracted at the mouth, reddish-brown. *Teeth* of the peristome shorter, slightly bifid, bright-red, not trabeculate at the back. *Operculum* with a reddish border. *Seta* longer and more slender. *Leaves* yellowish, longer and more acute, less reflexed in the margin, less crisped when dry; areolæ at the base smaller, not pellucid. *Perichætial leaves* longer and less sheathing. —PLATE CLXXI. Fig. 5; 1, fruiting specimen; 2, leaf; 3 and 4, capsule; 5, calyptra; 6, teeth:—*all magnified.*

Gen. VII. SYMBLEPHARIS, *Montagne.*

Peristomium simplex; *dentes* 8, breves, bigeminati (vel 32, quaternatim approximati), erecti, siccitate in conum conniventes. *Capsula* subcylindrica, erecta, microstoma. *Calyptra* cylindrico-subulata, elongata, dimidiata. *Perichætii* folia longissima, vaginantia.—Holomitrium, *Bridel.* Sprucea, *Hook. fil. et Wils. in Fl. Antarct.*

1. **Symblepharis perichætialis** (Wils.); caule erecto ramoso, foliis confertis erecto-patentibus siccitate crispis e basi lanceolata subulato-attenuatis integerrimis canaliculatis margine planis nervo continuo, perichætialibus longissimis, capsula oblonga, operculo conico-subulato recto.—*Fl. N. Zeal. p.* 60. Trichostomum perichætiale, *Hook. Musc. Exot. t.* 73. Holomitrium perichætiale, *Bridel.*

HAB. Tasmania. (*Gunn*, 18.)

DISTRIB. Mauritius, Campbell's Island, New Zealand.

Tribe III. FISSIDENTEÆ.

Gen. VIII. FISSIDENS, *Hedw.*

Peristomium simplex; *dentes* 16, æquidistantes, longiusculi, linea media percursa, in crura duo raro tria inæqualia subulata fissi, crebre articulati, hygroscopici, siccitate geniculati incurvi. *Calyptra* cuculliformis, raro conico-mitræformis. *Fructificatio* in caule primario vel in ramis brevibus secundariis terminalis.—Folia *disticha, equitantia, alternantia, dorso in alam et apice in laminam verticalem scalpelliformem producta, compresso-canaliculata, semiamplexicaulia.*

Distinguished from *Dicranum* by the distichous, equitant, vertical leaves.

§ a. *Folia marginata.*

1. **Fissidens incurvus** (Schwægr. Suppl. i. 2. p. 5. t. 49); caule simplici decumbente, foliis lanceolatis marginatis lamina dorsali supra basin discontinuata nervo subcontinuo, capsula cernua incurva, operculo conico-acuminato, fl. masc. terminali vel basilari gemmæformi.—*Br. et Sch. Bryol. Europ. ex parte.*

Var. 1; folii laminis dorsalibus verticalibusque vix marginatis.

Var. 2; foliis cuspidatis rigidulis flexuosis lutescentibus, seta pallida.

Hab. Var. 1. St. Patrick's River; on the ground, in shady forests. (*Gunn*, 1622.) (*Oldfield*, 333.) Var. 2. By the sea-side, South Port. (*Gunn*, 15.)

Distrib. Europe, America.

2. **Fissidens vittatus** (Hook. fil. et Wils.); caule subramoso, foliis incurvis secundisve ovato-ligulatis marginatis siccitate crispatis involutis basi undulatis infra marginem vittatis, seta terminali, capsula ovata cernua, operculo conico-rostellato. (Tab. CLXXI. Fig. 6.)

Hab. Circular Head, on the ground. (*Gunn*, 1697.)

Distrib. Swan River, South-eastern Australia.

Stem about 2 lines in height. *Leaves* apiculate, bent to one side, carinate on the back, nerve strong and prominent, the vittæ at the base of the leaf forming a cartilaginous margin in the upper part; male flower not found (dioicous?).—Closely allied to *F. limbatus* (Sullivant, in Lieutenant Whipple's Expedition).—Plate CLXXI. Fig. 6: 1, fruiting specimen; 2, leaf; 3, section of ditto; 4, capsule:—*all magnified.*

3. **Fissidens rigidulus** (Hook. fil. et Wils. Fl. N. Zeal. p. 61. t. 83. f. 3); dioicus?, caule gracili elongato ramoso polyphyllo, foliis rigidulis siccitate subcrispis ovato-lanceolatis acutiusculis (lamina verticali brevi) margine valde incrassatis, nervo valido pellucido continuo, capsula terminali ovali suberecta, operculo rostellato, fl. masc. terminali.

Hab. Circular Head; on stones in running water, Mount Wellington; Tent rivulet, Cheshunt, and on rocks, Stackhouse Falls, *Archer*. (*Gunn*, 1699.) (*Oldfield*, 250.)

Distrib. New Zealand.

4. **Fissidens brevifolius** (Hook. fil. et Wils. Fl. N. Zeal. p. 61. t. 83. f. 4); caule longiusculo, ramis fructiferis basilaribus brevioribus, foliis caulinis confertis ovatis brevissimis cymbiformibus basi vaginante tantum marginatis, rameis dissitis longius acuminatis, lamina dorsali discontinua, capsula suberecta.

Var. *β. floribundus;* foliis longioribus siccitate crispulis, floribus fœm. et masc. numerosis axillaribus.

Hab. Shady banks by the Derwent, New Norfolk. (*Oldfield*, 218.)

Distrib. New Zealand, South Africa, South America.

5. **Fissidens Taylori** (C. Mueller); monoicus, humillimus, simplex, laxe aggregatus; caulibus sterilibus flexuosis, foliis 7–8-jugis infra laxis superne confertis erecto-patentibus oblongis obtusissimis nervo apiculatis; lamina dorsali supra basin desinente; planta fertili foliis 2–3-jugis erectis adpressis amplectantibus acuminatis; seta subflexuosa; theca ovali, inclinata, operculo rostrato breviore.—*C. Mueller, Synops. Musc. Frond.* i. 65; *Mitten, in Journ. Linn. Soc. ined.* F. pygmæus, *Taylor, Lond. Journ. Bot.* 1846, *p.* 66.

Hab. On the earth, in copses, forests, etc.: Cheshunt, *Archer.*

Distrib. Australia.

§ b. *Folia immarginata.*

6. **Fissidens strictus** (Hook. fil. et Wils.); monoicus, caule longiusculo gracili subramoso, ramis

fructiferis axillaribus polyphyllis, foliis strictis rigidiusculis carnosis confertis suberectis lineari-lanceolatis acutiusculis integerrimis subevanidinerviis, seta brevi crassa, capsula turbinata parva suberecta pachyderma, operculo rostrato capsulæ æquali, calyptra parva mitræformi. (TAB. CLXXI. Fig. 7.)

HAB. Yorktown rivulet. (*Gunn,* 1610.) On a charred log, under water, in the river Derwent. (*Oldfield,* 37.)

Stem ½ inch in height. *Fertile ramuli* not 2 lines in length. *Seta* 1–2 lin. *Capsule* very small, roundish or turbinate. *Peristome* red. *Male flowers* terminal on axillary ramuli.—In habit like *F. grandifrons* (Bridel), but not half the size. *Leaves* of thinner texture, with larger areolæ and more evident nerve, which is reddish in the older leaves. *Colour of the foliage* lurid in age, at first pale-green.—PLATE CLXXI. Fig. 7; 1, fruiting specimen; 2 and 3, leaves; 4, section of ditto; 5, capsule; 6, calyptra:—*all magnified.*

7. **Fissidens tenellus** (Hook. fil. et Wils. Fl. N. Zeal. p. 62. t. 83. f. 6); caule pusillo decumbente 6–8-phyllo, foliis lineari-lanceolatis acutis crenulatis basi vaginante denticulatis nervo valido concolore subexcurrente, capsula erecta, operculo longirostri, calyptra papillosa mitræformi, fl. masc. basilari gemmæformi.

HAB. On the ground. (*Gunn,* 17 *b.*) (*Oldfield.*) Sandstone Hill, *Archer.*

DISTRIB. New Zealand.

8. **Fissidens oblongifolius** (Hook. fil. et Wils. Fl. N. Zeal. p. 62. t. 83. f. 8); monoicus, fronde lineari-elongata polyphylla, foliis confertis erecto-patentibus elongatis anguste ligulatis obtusiusculis integris siccitate subinflexis, seta gracili, capsula minuta ovali inclinata, fl. masc. axillari.

HAB. North-west Bay, on rocks. (*Oldfield,* 313 *d.*) Cataract Hill, *Archer.*

DISTRIB. New Zealand.

9. **Fissidens integerrimus** (Mitten, in Journ. Linn. Soc. ined.); "dioicus?, caule humili cæspitoso ramoso, foliis pluri-jugis in frondem linearem approximatis patentibus lineari-lanceolatis apice obtusiusculis, nervo concolori sub apice evanido lamina vera ad mediam producta inæquali uno latere rotundata, dorsali basi sensim angustata omnibus lam. immarginatis integerrimis cellulis diametro circiter $\frac{1}{3000}$ unciæ metientibus limitibus crassiusculis, perichætialibus conformibus, theca in pedunculo breve apicali crassiusculo suberecta breve ovali, operculo subulato breviore." (TAB. CLXXI. Fig. 8.)

HAB. Cheshunt, *Archer.*

"Half an inch high. *Seta* scarcely 2 lines long.—In general appearance nearly allied to *F. oblongifolius,* but its leaves are entire, the cells smaller, with thicker walls. *Male flowers* absent. In the few specimens yet seen the plants are, above, brownish-yellow; below, black." *Mitten, l.c.*—PLATE CLXXI. Fig. 8; 1, part of stem and leaves; 2, capsule:—*both magnified.*

10. **Fissidens pallidus** (Hook. fil. et Wils. Fl. N. Zeal. p. 62. t. 83. f. 7); dioicus, fronde flabelliformi breviuscula decumbente, foliis lineari-lanceolatis elongatis confertis acutis integerrimis siccitate inflexis, capsula cernua, operculo longirostri.

HAB. On the ground. (Specimen barren and scanty.) (*Gunn.*)

DISTRIB. New Zealand.

11. **Fissidens adiantoides?** (Dill. Hist. Musc. 264. t. 34. f. 3).

Var. caule gracili polyphyllo, foliis confertis brevioribus (oblongo-ovatis) siccitate incurvis.

HAB. On the ground? (*Gunn,* 45.) (Specimen barren and scanty.) Small island at the foot of Top Paddock, Woolmers, *Archer.*

DISTRIB. Europe, America.

Tribe IV. Leucobryaceæ.

Gen. IX. LEUCOBRYUM, *Hampe.*

Peristomium simplex; *dentes* 16, lanceolato-subulati, bicrures, transverse articulati, intus trabeculati, extus strigillosi. *Capsula* cernua, ovalis, gibba, collo strumoso, operculo longirostri, coriacea, 8-striata, sicca sulcata, exannulata. *Calyptra* inflato-cuculliformis, longirostris.—Folia *lanceolato-subulata, convolutaceo-concava, spongiosa, e cellularum stratis* 2 *vel pluribus conflata (cellulis quadrato-hexagonis porosis), enervia, glauca vel albida.*

1. **Leucobryum candidum** (*Dicranum,* Schwægr. Suppl. t. 187 *β*); caule ramoso dichotomo fragili, foliis confertis erectis secundis subfalcatis ovato-lanceolatis concavis dorso tuberculatis corrugatis, ramulis fructiferis axillaribus numerosis brevissimis, capsula cernua strumosa sulcata.—*Fl. N. Zeal. p.* 64.

Hab. On decayed wood at the roots of trees, in swamps, etc.: Huon River; Brown's River. (*Oldfield,* 108, 329.) (*J. D. H.*) Cheshunt, *Archer.*

Distrib. New Zealand, Australia.

Tribe V. Dicranaceæ.

Gen. X. DICRANUM, *Hedw.* (*in parte*).

Peristomium simplex; *dentes* 16, basi confluentes, sicci et humidi arcuato-conniventes, lanceolati, ad medium et ultra in crura duo subulata inæqualia divisi, intus trabeculati. *Capsula* plerumque cernua, oblonga, inæqualis. *Operculum* longirostre, rostro obliquo. *Calyptra* cucullata.—Folia *e cellularum strato unico conflata, nervata.* Caules *cæspitosi, perennes.*

1. **Dicranum Sieberianum** (Hornsch. Musc. Sieb. Nov. Holl. n. 16); caule ramoso fastigiato, foliis falcatis convoluto-canaliculatis ovato-lanceolatis acuminatis superioribus piliferis tenuissime pellucido-marginatis dorso papillosis, perichætialibus vaginatis piliferis, capsula longe pedunculata ovali cernua parva, operculo longirostri.—*Schwægr. Suppl. t.* 252. Leucodon pallidus, *Hook. Musc. Exot. t.* 172.

Hab. Specimen barren and scanty, growing with *D. pungens.*—(*Gunn.*)

Distrib. Australia, New Zealand.

2. **Dicranum dicarpon** (Hornsch. Musc. Sieb. Nov. Holl. n. 10); caule robusto dense radiculoso-tomentoso, foliis patulis squarrosis subsecundis ex basi ovato-lanceolato subulatis cuspidatis flexuosis striatis solidinerviis strigosis margine dorsoque spinuloso-serratis, setis brevibus geminatis longe vaginatis, capsulis curvatis cernuis, operculo longirostri.—*Schwægr. Suppl. t.* 251. D. leucolomoides, *C. Mueller, Bot. Zeit.* 1851, *p.* 549, *fide Mitten, in Journ. Linn. Soc.*

Var. *β. spinosum;* caule elatiore, setis numerosis longioribus.

Hab. In dense moist woods: Back River Gully, New Norfolk, *Oldfield,* 36 (*J. D. H.*) (*Gunn,* 1682); Cheshunt and elsewhere, frequent, *Archer;* Wellington Falls, Mount Wellington, *Mossman.*

Distrib. Australia, New Zealand.

3. **Dicranum Billardieri** (Bridel, Br. Un. i. 401); caule elato, foliis falcato-secundis ovato-lanceolatis acuminatis concavis membranaceis tenuinerviis estriatis apice serrulatis, seta longiore, capsula subcylindrica curvata basi strumifera, operculo longirostri.—*Schwægr. Suppl. t.* 121; *Fl. Antarct.* 129, 407.

Hab. Common at the roots of trees: summit of Mount Wellington, Brown's River Gully. (*Gunn,* 1581, 11 *b; Stuart; J. D. H.; Oldfield,* 110, 112, 113, 200.)

Distrib. Lord Auckland's Island, Fuegia, New Zealand, Australia.

4. **Dicranum angustinerve** (Mitten, in Journ. Linn. Soc. ined.); "dioicum, *D. Billardieri* simile, caulibus brevibus ramosis, foliis patentibus subsecundis e basi subovali elongata sensim angustatis nervo angusto percurrente dorso marginibusque apicem versus serrulatis cellulis elongatis angustis alaribus oblongis quadratisque flavide fuscis in massam quadratam utrinque dispositis, perichætialibus convolutis internis vaginantibus subito in acuminem brevem setiformem angustatis, theca in pedunculo breviusculo semiunciali arcuata inclinata basi strumosa, peristomii dentibus rubris dicranis." (TAB. CLXXI. Fig. 9.)

HAB. On dead wood: Cheshunt, *Archer*. Gathered also by Mr. Gunn, and communicated amongst some other Tasmanian Mosses by Mr. J. Nowell.

"Nearly allied to *D. Billardieri*, but with somewhat the aspect of *D. reflexum*, C. Mueller. It differs from *D. Billardieri* in the form of the wider portion of its leaves being more elongate, and the narrow upper part being shorter. The internal perichætial leaves are also furnished with a bristle-like point, which seems wanting in *D. Billardieri*." *Mitten, l. c.*—PLATE CLXXI. Fig. 9; 1, cauline leaf; 2, perichætium; 3, capsule; 4, teeth:—*all magnified.*

5. **Dicranum pungens** (Hook. fil. et Wils. Fl. Antarct. p. 17. t. 59. f. 1); caule elongato subramoso, foliis secundis patentibus lineari-lanceolatis convolutis apice carinatis serrulatis tenuinerviis, perichætialibus convolutis elongatis, seta mediocri torta, capsula inclinata oblonga curvula, operculo longirostri.—D. Novæ-Hollandiæ, *Hornsch. Musc. Sieb. Nov. Holl. n.* 7 (*in parte*).

HAB. Among rocks and running water: summit of Mount Wellington. (*Gunn*, 12.) (*Oldfield*, 109, 255.) Cheshunt, *Archer*.

DISTRIB. Lord Auckland's and Campbell's Islands, Australia.

6. **Dicranum robustum** (Hook. fil. et Wils.); caule elongato, foliis falcato-secundis longissimis lineari-lanceolatis setaceo-attenuatis convolutis spinuloso-serrulatis nervo latiusculo excurrente, perichætialibus vaginantibus, capsula cylindracea inclinata curvula strumulosa.—*Fl. N. Zeal. p.* 66; *Fl. Antarct. p.* 406. *t.* 152. *f.* 8; *Mitten, in Journ. Linn. Soc. ined.*

HAB. Cheshunt, *Archer*.

DISTRIB. Lord Auckland's Group, Campbell's Island, Kerguelen's Land, Fuegia, and New Zealand.

7. **Dicranum setosum** (Hook. fil. et Wils. Fl. Antarct. p. 17. t. 58. f. 5); caule fragili subramoso, foliis strictis fragilibus suberectis longissime lanceolato-setaceis apice serrulatis nervo latiusculo subexcurrente, seta longiuscula, capsula oblonga curvata, operculo longirostri.—*Fl. N. Zeal. p.* 66.

HAB. Springs, Mount Wellington. (*J. D. H.*) (*Oldfield*, 107.)

DISTRIB. New Zealand, Lord Auckland's Group, and Campbell's Island.

8. **Dicranum Menziesii** (Taylor, in Phytol. ii. p. 1094); caule radiculoso-tomentoso, foliis confertis secundis subrigidis lanceolato-setaceis crassinerviis, seta brevi, capsula oblonga suberecta subexserta strumulosa, operculo longirostri.—*Fl. Antarct. p.* 128. *t.* 58. *f.* 4. D. brachypelma, *C. Mueller, Bot. Zeit.* 1851, *p.* 550, *fide Mitten, in Journ. Linn. Soc. ined.*

Var. *β. rigidum;* foliis rigidioribus minus confertis nigro-viridibus patulis subfalcatis, caule robustiore.

HAB. Dense forests. (*Gunn*, 10.) River Acheron. (*Gunn*, 1582 *b.*) Cheshunt, *Archer*.

DISTRIB. Antarctic Islands, New Zealand.

9. **Dicranum angustifolium** (Hook. fil. et Wils.); caule longiusculo, foliis confertis suberectis e basi lanceolata longe setaceis integerrimis apice siccitate flexuosis, nervo angusto excurrente. (TAB. CLXXII. Fig. 2.)

HAB. In bogs: Mount Wellington, *Gunn*, *Oldfield*. (Barren specimen only.)

Nearly allied to *D. tenuifolium* (Hook. fil. et Wils. Fl. Antarct. t. 152. f. 7).—*Leaves* erect, not falcate, longer, of firmer texture; nerve well defined, less capillary at the apex; alar cellules subquadrate, coloured.—In the lurid hue and general aspect it resembles *Didymodon longifolius*, var. *penicillatus* (Fl. Antarct.).—PLATE CLXXII. Fig. 2: 1 and 2, leaves:—*magnified*.

10. **Dicranum Starkii?** (Web. et Mohr, Bot. Tasch. 189).—*Br. et Schimp. Br. Eur. t.* 64.

HAB. Brown's River. (*Oldfield*, 326 *f.*) (Barren and dwarf specimens only.)

DISTRIB. Europe.

Leaves lanceolate-setaceous, entire; nerve narrow, well defined.

11. **Dicranum Sphagni?** (Wahlenb. Fl. Lapp. 337).

HAB. (Barren specimen.) (*Gunn.*)

DISTRIB. Europe, America?

Stem 1 inch long. *Leaves* yellowish, subulate-lanceolate, entire; nerve strong, excurrent.

12. **Dicranum (Leptotrichum) ferrugineum** (Mitten, in Journ. Linn. Soc. ined.); "dioicum, caulibus cæspitosis radiculis ferrugineis dense intertextis, foliis e basi erecta ovali-oblonga sensim attenuatis patentibus integerrimis nervo percurrente cellulis basi utrinque ad margines pluribus oblongis quadratisque parallelogrammaticis superioribus inæqualibus perichætialibus conformibus, theca in pedunculo rubro erecta globoso-ovata, operculo conico-rostrato, peristomio e dentibus latis rubris dicranoideis, annulo latiusculo composito." (TAB. CLXXII. Fig. 1.)

HAB. On the ground: plain near Cumming's Head, Western Mountains, *Archer.*

"Whole plant dull ferruginous-green. *Stems* from half an inch to 1 inch in height.—In general appearance it has some resemblance to *D. Jamesoni* (Tayl.), but it is smaller, compactly cæspitose, and interwoven with intensely ferruginous radicles. The seta is about 3 lines long, rather stout, pale-red. The small, subglobose, erect capsule distinguishes it readily from its allies." *W. Mitten, l. c.*—PLATE CLXXII. Fig. 1; 1 and 2, leaves; 3, capsule and calyptra; 4, teeth:—*all magnified.*

13. **Dicranum Tasmanicum** (Hook. fil. Ic. Pl. t. 248); dioicum, caule elongato, foliis laxiusculis patentibus lanceolato-oblongis obtusis canaliculatis integerrimis apice concavis evanidinerviis siccitate incurvis crispulis, capsula erecta turbinata macrostoma, operculo longirostri.—Dichodontium, *Schimper* (*vid. Bryol. Europ.*). Didymodon, *Mitten, in Journ. Linn. Soc. ined.*

HAB. Wet cliffs. (*Gunn*, 1607.) (*Oldfield.*) Fossiliferous limestone: Meander River, *Archer.*

DISTRIB. New Zealand.

Gen. XI. BLINDIA, *Br. et Sch.*

Peristomium simplex; *dentes* 16, lanceolati, remote articulati, læves, apice hic illic pertusi vel bifidi, intus leviter trabeculati, purpurei, cartilaginei. *Capsula* exannulata, e collo tumido truncato-sphærica, sub-pyriformis, solida, sicca vacua turbinata. *Operculum* rostratum. *Calyptra* infra operculum producta, cucullata, fere usque ad apicem fissa, primo basi angularis. *Folia* dicranoidea, areolatione ad angulos basilares valde dilatata, quadrata, aurantiaca. *Flores* dioici, terminales, antheridia majora.—Plantæ *plus minus elatæ, dense cæspitosæ;* caule *filiformi, fragili, iterum dichotome ramoso, parce radiculoso.*

1. **Blindia acuta** (Br. et Sch. Bryol. Europ. t. 114); dioica, foliis confertis erecto-patentibus sub-secundis rigidulis nitidis e basi concava oblongo-lanceolata nervo excurrente lineari-subulatis, perichætialibus vaginantibus superne patentibus, capsula in seta brevi globoso-pyriformi, peristomii dentibus purpureis siccitate erecto-patentibus.—Weissia acuta, *Hedw. Musc. Frond. t.* 35.

Var. *β. curviseta ;* capsula subrotunda, seta arcuata crassiore, peristomii dentibus crebre articulatis, operculo brevius rostellato.—Weissia acuta, var. *β*, *Fl. Antarct. p.* 98.

Hab. On rocks: Johnny's Creek. (*Oldfield*, 135.) On stones: rivulet near Cumming's Head, Western Mountains, *Archer*.

Distrib. Falkland and Hermite Islands.

Gen. XII. CAMPYLOPUS, *Bridel.*

Peristomium Dicrani. *Capsula* in pedicello arcuato inter folia comalia demissa, ovalis, æqualis vel gibba, striata; *operculo* oblique rostrato. *Annulus* duplex, revolubilis. *Calyptra* cucullata, basi fimbriata.—Fructus *sæpius aggregati.* Folia *nervo lato dorso plus minus lamellato instructa, lanceolato-setacea.* Florescentia *dioica.*

1. **Campylopus introflexus** (Hedw. Sp. Musc. t. 29); caule ramoso, foliis imbricatis e basi lata concava marginibus pellucida acuminato-lanceolatis piliferis, nervo lato, pilo spinuloso divaricato, capsula obovata inequali.

Hab. Abundant on dry ground and in swamps, *J. D. H.* Georgetown. (*Gunn*, 1584 *a.*) (*Lawrence*, 4.) (*Stuart.*) Back River. (*Oldfield*, 229.) On logs and on the ground: Cheshunt, *Archer.*

Distrib. Falkland and Campbell's Islands, Australia, New Zealand.

2. **Campylopus clavatus** (Brown); caule dichotomo fasciculato, foliis lanceolato-acuminatis piliferis solidinerviis strictis aureis, capsula pendula striata.—*Schwægr. Suppl. t.* 255 *a.* (Dicranum).—*W. Mitten, l. c.*

Hab. Tasmania, *Brown, G. Sieber, Oldfield.*

Distrib. New Zealand; found in all the islands.

"This species entered into the composition of Hornschuch's *D. pudicum*, being intermixed with the stems of *D. introflexum*."—*W. Mitten, l. c.*

3. **Campylopus insititius** (Hook. fil. et Wils.); caule rigidulo interrupte comoso subgracili, foliis erecto-patentibus subrecurvis siccitate incurvis, caulinis lanceolato-subulatis canaliculatis muticis, comalibus lanceolato-acuminatis recte piliferis latinerviis dorso elamellatis, perichætialibus ovato-lanceolatis sensim piliformi-acuminatis, seta pallida, capsula elliptica subæquali vix strumosa. (Tab. CLXXII. Fig. 3.)

Hab. Southport, *Stuart.* Bogs: in gullies about Brown's River; common. (*Oldfield*, 305–8.)

Stem 1–3 inches long, blackish below. *Leaves* with a short pellucid base; areolæ oblong-elliptical. *Peristome* red; teeth distantly barred, striated, colourless at the apex.—Differs from *C. introflexus* in the form and texture of the leaves, capsule, and peristome.—Plate CLXXII. Fig. 3; 1, portion of stem and capsule; 2 and 3, leaves; 4, capsule; 5, calyptra; 6, teeth:—*all magnified.*

(This appears to me to be identical with Brown's *C. clavatus*, W. Mitten.)

4. **Campylopus capillatus** (Hook. fil. et Wils.); caule gracilente rigidiusculo rufo-tomentoso, foliis erecto-patentibus subsecundis subrecurvis siccitate laxis subflexuosis, caulinis e basi ovato-lanceolata repente subulato-setaceis latinerviis dorso sublamellatis apice subintegris inferne pellucidis, perichætialibus vaginantibus membranaceis apice setiformi-attenuatis, capsula subelliptica leptoderma, calyptra brevi breviter fimbriata.—Dicranum pyriforme, *Schultz ; Mitten in Journ. Linn. Soc. ined.* (Tab. CLXXII. Fig. 4.)

Hab. Bogs: Brown's River, with the preceding species. (*Oldfield*, 305–8.) South Port, *Stuart.*

Allied to *Dicranum nivale* (C. Mueller), and to *C. torfaceus* (Br. and Schimper).—*Stem* 1–2 inches or more. *Leaves* bright-green, glossy; areolæ quadrate, at the base rectangular and pellucid. *Setæ* pale. *Capsule* almost

symmetrical. *Peristome* red. *Spores* small.—PLATE CLXXII. Fig. 4; 1, leaf; 2, capsule and calyptra; 3, ditto, with calyptra removed; 4, teeth:—*all magnified.*

5. **Campylopus bicolor** (Hornsch. in Musc. Sieb. n. 9); foliis strictis confertis lanceolato-subulatis obtusis apice concavis.—*Fl. N. Zeal. p.* 69.

HAB. (Barren specimen only.) (*Gunn,* 13.)

DISTRIB. New Zealand, Australia.

6. **Campylopus torquatus** (Mitten, in Journ. Linn. Soc. ined.); "*C. pyriformi* omnibus partibus maxime similis sed foliis a parte inferiore magis gradatim subulatis et lamina altiore a nervo distinguenda, cellulis in parte laminæ superiore quadruplo minoribus, foliis perichætialibus internis basi tenerioribus, pedunculo siccitate spiraliter torto."—Campylopus pallidus, *ex parte Hook. fil. et Wils. Fl. N. Zeal.* ii. *p.* 68. *t.* 84. *f.* 3. Dicranum flexuosum, *C. Mueller, in adnot. ad Muscos Mossmanianos, Bot. Zeit.* 1851, *p.* 551. D. Campylopus torfaceus, *Mitten, in Hook. Kew Miscel.* 1856, *p.* 257. D. Campylopus torquatus *ejusd.*

HAB. West-end Rivulet, Cheshunt, on decayed logs, *Archer.*

DISTRIB. New Zealand, Australia.

"So very much does this species resemble *D. pyriforme* (*Campylopus*), Schultz, that it may readily be passed over as a state of that species, having the same soft appearance. The species referred to in the 'Flora of New Zealand' as the typical form, gathered by Professor Jameson in the Andes of Quito, is a more robust species, with stiffer, less finely attenuated leaves, and a capsule rough at the base. *Dicranum nodosum,* Beauv. in Herb. Hook., is a much larger Moss, with leaves having a longer base, stouter nerve, and stiffer habit; it is in all probability synonymous with *Campylopus nivalis,* Brid. If *Campylopus* could be defined so as to distinguish it from *Dicranum,* there would be no necessity to alter the name of the present species, but it seems impossible to separate them in an extensive herbarium, notwithstanding the difference in the aspect of some of the species; and there being a *Dicranum pallidum* from North America previously published by Bruch and Schimper, an alteration has become unavoidable."—*Mitten, l. c.*

Gen. XIII. TREMATODON, *Richard.*

Peristomium simplex; *dentes* 16, lanceolati, in crura duo inæqualia fissi, articulati, strigillati et granulati. *Calyptra* inflato-cucullata. *Capsula* apophysi longa attenuata instructa, cernua, oblonga, annulata. *Operculum* longirostre.—Habitus *dicranoideus.* Folia *angusta.*—*Fl. N. Zeal. p.* 69. (*W. Mitten.*)

1. **Trematodon flexipes** (Mitten, in Journ. Linn. Soc. ined.); "dioicus?, cæspitosus, caule breviusculo, foliis erecto-patentibus lanceolato-subulatis integerrimis nervo lato totam fere folii partem superiorem occupante, perichætialibus latis vaginantibus, theca in pedunculo brevi gracili flexuoso stramineo suberecta rufo-fusca, collo pallidiore æquilongo, operculo curvirostrato, peristomio e dentibus rubris dicranoideis, annulo composito." (TAB. CLXXII. Fig. 6.)

HAB. On the ground: plain near Cumming's Head, Western Mountains, *Archer.*

"Very nearly resembling *T. brevicollis,* but with leaves in which the nerve occupies the whole of the upper three-fourths, the seta flexuose, and the peristome with distinctly cleft teeth." *Mitten, l. c.*—PLATE CLXXII. Fig. 6; 1, leaf; 2, perichætium; 3, capsule and calyptra; 4, teeth:—*all magnified.*

Tribe VI. TRICHOSTOMEÆ.

Gen. XIV. DESMATODON, *Bridel.*

Peristomium simplex; *dentes* 16, bi-trifidi; *crura* tetragona, remote articulata, granulosa, plerumque

articulationibus singulis connexa, humida erecta, sicca incurva vel sinistrorsum subconvoluta, paulisper hygroscopica. *Calyptra* cucullata.—Habitus *Trichostomi.* Florescentia *monoica,* fl. masc. *axillaris, gemmæformis.*

1. **Desmatodon nervosus** (Br. et Schimp. Bryol. Eur. t. 132); caule humili, foliis patentibus siccitate inflexis vel convolutis ovali-oblongis apiculatis concavis margine revolutis, nervo valido superne incrassato spongioso excurrente, capsula ovali-oblonga erecta exannulata, operculo suboblique conico-rostellato, peristomio dentibus inæqualibus.

HAB. On dry earth, banks, etc., abundant, *J. D. H.;* Cheshunt, *Archer.*

DISTRIB. New Zealand, Europe, America.

Dr. Hooker's specimen has the peristome longer than usual, approaching to that of *Tortula.* Nearly allied to *Tortula recurvata* (Hook.), but the leaves are shorter and more thickly nerved.

Gen. XV. TORTULA, *Schreb.*

Peristomium simplex; *dentes* 32, longissimi, filiformes, sinistrorsum contorti, hygroscopici, basi membrana brevi vel in tubum producta coaliti. *Capsula* erecta, oblonga, annulata. *Operculum* conicum, oblique subulatum.

1. **Tortula Knightii** (Mitten); "monoica, habitu statura coloreque *T. Northianæ* simillima, foliis siccitate crispatis humido patentibus e basi paululum latiore subovata lanceolatis apice acuminatis, comalibus sensim ad apicem angustatis lanceolatis marginibus undulatis integerrimis nervo concolore excurrente mucronatis, cellulis basi hyalinis elongatis utrinque ad margines altiore quam in medio adscendentibus subito in minutas virides obscuras transeuntibus, perichætialibus longioribus paululo latioribus, theca in pedunculo rubro cylindrica, operculo subulato, theca dimidio breviore peristomio et flore masculo *T. Northianæ.*"—*Mitten, in Journ. Linn. Soc. ined.* T. cæspitosa, var., *Hook. fil. et Wils. in Fl. N. Zeal. p.* 70. (TAB. CLXXII. Fig. 11.)

HAB. Wellington Falls, Mount Wellington, *Mossman.*

DISTRIB. New Zealand.

"Distinct from *T. Northiana* (Grev.) = *T. cæspitosa* (Schwægr.) in the much narrower leaves, with undulated margins." *Mitten, l. c.*—PLATE CLXXII. Fig. 11; 1 and 2, leaves; 3, capsule; 4, ditto, with operculum removed; 5, male flower:—*all magnified.*

2. **Tortula recurvata** (Hook. Musc. Exot. t. 130); monoica, caule humili, foliis patentibus siccitate erectis inflexis ligulato-lanceolatis concaviusculis nervo crasso excurrente apiculatis margine revolutis, seta elongata gracili, capsula oblonga suberecta, annulo simplici, operculo conico-subulato.

HAB. On wet ground: Mount Dromedary. (*Oldfield,* 335.)

DISTRIB. South Africa.

Nearly allied to *Desmatodon nervosus,* twice as tall, and of more slender habit.—*Leaves* almost ligulate, the nerve not so much thickened upwards. *Seta* very pale reddish, 1 inch long. *Capsule* elongated, tapering at the base and in the upper part, pale reddish-brown. *Peristome* twisted, and perfectly conformable to the genus.

3. **Tortula torquata** (Taylor); foliis confertis erecto-patentibus siccitate spiraliter arcteque contortis lanceolatis acuminatis integerrimis margine revolutis, nervo valido subexcurrente, capsula erecta oblonga, operculo subulato.—*Taylor, in Lond. Journ. Bot.* v. *p.* 50; *Mitten, in Journ. Linn. Soc. ined.*

HAB. Cheshunt, *Archer.*

4. **Tortula Australasiæ** (Hook. et Grev. in Brewst. Journ. Sc. i. 301. t. 12); caule breviusculo

subsimplici, foliis lineari-lanceolatis acutis patentibus subrecurvis siccitate crispis tortilibus carinatis margine subreflexis nervo rubello percursis, capsula ovato-cylindracea, operculo brevi-rostrato.

Var. foliis laxioribus. (*Oldfield.*)

HAB. Hobarton, on the ground, *Lyall;* west side of Cataract, Launceston, *Archer.*

DISTRIB. New Zealand, Australia.

5. **Tortula calycina** (Schwægr. Suppl. t. 119); caule brevissimo subramoso, foliis lanceolatis subundulatis margine planis crassinerviis, perichætialibus elongatis vaginantibus, seta longissima, capsula elliptico-oblonga suberecta, operculo longissimo subulato.—T. flexuosa, var.?, *Hook. Musc. Exot. t.* 125.

Var. foliis longioribus acutioribus attenuatis. (*Gunn.*)

HAB. Hobarton; on stones and at the foot of trees, dry hills: Brown's River, etc., *Lyall.* (*Oldfield,* 331, 132.) (*Gunn,* 1620, 1587.) Port Sorrell, *Archer.*

DISTRIB. New Zealand, Australia, East Indies.

6. **Tortula pungens** (Hook. fil. et Wils.); dioica, caule longiusculo subramoso rigidulo, foliis erecto-patentibus subrecurvis siccitate crispato-tortis lanceolato-ligulatis margine revolutis dorso papillatis nervo valido concolore in mucronem lævem breviusculum excurrente, perichætialibus longioribus erectis lanceolatis membranaceis subvaginantibus, capsula cylindrica curvula.—T. luteola, *Mitten, in Kew Miscel.* 1857, *p.* 258! T. Tasmanica, *Hampe, in Linnæa?* (TAB. CLXXII. Fig. 7.)

HAB. Common on rocks: Grass Tree Hill, etc., *J. D. H., Gunn;* on a high hill called the Dromedary, Johnny's Creek. (*Oldfield,* 59, 317, 115.) Cheshunt, *Archer.*

DISTRIB. Australia.

Nearly allied to *T. pilifera* (Hook. Musc. Exot. t. 12).—*Leaves* wider, not piliferous, less dilated below, more crisped when dry. *Perichætial leaves* less sheathing. *Seta* longer (1 inch), reddish below, yellowish above, flexuose.—PLATE CLXXII. Fig. 7; 1, leaf; 2, capsule; 3, calyptra:—*all magnified.*

7. **Tortula Antarctica** (*Barbula,* Hampe, C. Mueller, Syn. Musc. i. 638); synoica, laxe cæspitosa, caule inferne radiculoso subgracili longiusculo, foliis erecto-patentibus subrecurvis siccitate laxe tortis lanceolato-ligulatis obtusis canaliculato-carinatis nervo crasso rubente in aristam hyalinam spinulosam producto margine revolutis basi pellucide reticulatis superne dense minute areolatis chlorophyllosis tenuissime papillosis, capsula in pedicello stricto rubenti-stramineo erecta.—T. Muelleri, *Fl. Antarct. p.* 103; *Fl. N. Zeal. p.* 71. Syntrichia princeps, *De Not. ex parte Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXII. Fig. 8.)

HAB. Hobarton, *J. D. H.;* Port Sorrell, *Archer.*

DISTRIB. Falkland Islands, New Zealand.

Leaves fawn-coloured, more lax and more twisted when dry than in *T. Muelleri* (Br. et Sch.), to which it is more nearly allied than to *T. lævipila* (Schwægr.), which has spathulate leaves.—PLATE CLXXII. Fig. 8; 1, leaf; 2, capsule; 3, calyptra:—*all magnified.*

8. **Tortula cuspidata** (Hook. fil. et Wils.); synoica, caule longiusculo crassiusculo subramoso, foliis confertis erecto-patentibus subrecurvis siccitate incurvis ligulatis obtusis margine revolutis nervo crasso rubente in mucronem longiusculum lævem producto basi pellucide reticulatis superne minutissime densius areolatis papillosis, capsula in pedicello rubello torto erecta.—Syntrichia princeps, *De Not. ex parte Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXII. Fig. 9.)

HAB. Moist earth, in woods, on Mount Wellington, *Oldfield;* Kangaroo Bottom, *J. D. H.;* Cheshunt, *Archer.*

DISTRIB. New Zealand.

Leaves more crowded than in *T. Antarctica*, wider above; areolation less opaque; colour green, tinged with red.—Closely allied to *T. Muelleri*. *Leaves* narrower, less appressed when dry.—PLATE CLXXII. Fig. 9; 1, leaf; 2, capsule; 3, ditto, with operculum removed; 4, calyptra:—*all magnified.*

9. **Tortula rubella** (Hook. fil. et Wils.); monoica, caule breviusculo parce ramoso, foliis confertis erecto-patentibus subrecurvis siccitate conduplicato-incurvis oblongis subspathulatis obtusiusculis margine superne planis inferne revolutis, nervo rubro crasso in pilo hyalino scabriusculo excurrente, seta longiuscula gracili, capsula subcylindrica leptoderma, peristomii tubo basilari longiusculo.— Syntrichia princeps, *ex parte Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXII. Fig. 10.)

HAB. On banks, rare: Glen Leith, *J. D. H.*, *Gunn;* Port Sorrell, *Archer.*

DISTRIB. New Zealand. (*Knight*, 87.)

Closely allied to *T. lævipila* (Schwægr.).—Habit more slender. *Antheridia* naked, axillary. *Leaves* narrower, more erect, scarcely recurved; areolæ smaller, dense and opaque. *Seta* more slender, red, nearly 1 inch long. *Peristome* tubular halfway.—Omitted in the New Zealand Flora.—PLATE CLXXII. Fig. 10; 1, leaf; 2, apex; and 3, section of ditto; 4, capsule and calyptra; 5, ditto, with calyptra removed:—*all magnified.*

10. **Tortula papillosa** (Wils.); "dioica, cæspitulosa, foliis obovatis valde concavis patentibus siccitate marginibus involutis papillosis, nervo superne granulifero in mucronem vel pilum excurrente, theca operculo tertio breviore, in pedunculo breviusculo crassiusculo cylindrica peristomii parte tertia inferiore tubulosa."—*Mitten, in lit.* Tortula papillosa, *Wils.; Spruce, in Lond. Journ. Bot.* 1845; *Wils. Bryol. Brit. p.* 135.

HAB. On trees, *Gunn.*

DISTRIB. Probably throughout the temperate parts of the world, Australia, the Cape of Good Hope, Britain, and Canada.

"This small species is readily distinguished by the green granules on the surface of the nerve in the upper portion of the leaf, and when dry by the involution of the margins."—*Mitten, in lit.*

11. **Tortula mnioides?** (Schwægr.); foliis laxe imbricatis patulis siccitate crispis undulatis ovato-lanceolatis acuminatis pellucido-marginatis.—*Schwægr. Suppl. t.* 310; *Mitten, in Journ. Linn. Soc. ined.*

HAB. On logs, in copses: Cheshunt, *Archer;* Mount Wellington, *Mossman.*

DISTRIB. New Zealand, and, if identical with Schwægrichen's Moss, which it appears to be, South America.

Gen. XVI. TRICHOSTOMUM, *Hedw., Brid.* (*ex parte*).

Peristomium simplex; *dentes* 32, plus minus perfecti, per paria approximati, filiformes, tetragoni, granulosi, crebre articulati, intorti. *Capsula* oblonga, erecta. *Calyptra* cucullata.—Florescentia *monoica vel dioica*, fl. masc. *gemmæformis.*

1. **Trichostomum elongatum** (Hook. fil. et Wils.); monoicum, caule longiusculo rigidulo simplici, foliis laxis erecto-patentibus subsecundis parum flexuosis rigidulis e basi elliptica majuscula amplexicaule membranacea pellucida longissime subulato-setaceis solidinerviis canaliculatis granuloso-serrulatis, seta elongata, capsula elongata cylindrica erecta, operculo conico-subulato. (TAB. CLXXIII. Fig. 1.)

HAB. Moist clayey soil: Mount Wellington, Grass Tree Hill, hills about Hobarton, *J. D. H.*, *Fraser;* Cheshunt, *Archer.*

DISTRIB. New Zealand.

Allied to *T. longifolium* (Brid.), distinguished by the pellucid margin of the large, sheathing, elliptical base of the leaf.—*Seta* 1 inch long, reddish. *Capsule* pale-brown long, cylindrical. *Annulus* large. *Operculum* half as

long as the capsule. *Male flower* often terminal on a branch.—Omitted in the New Zealand Flora.—PLATE CLXXIII. Fig. 1; 1, leaf; 2, capsule; 3, ditto, with operculum removed; 4, teeth and annulus:—*all magnified.*

2. **Trichostomum cylindricarpum** (C. Mueller); "dioicum!; cæspites humiles, setoso-foliosi, rigidi, sordide lutescentes; caules intertexti, subsimplices, densifolii, robustiores, subgraciles, breviusculi; folia caulina dense conferta, longa, setiformia, sicca subcrispate subsecunda, e basi longiuscule vaginante angusta, inferne laxiuscule, superne sensim rotundate incrassate areolata, pallida, tenera, in subulam elongatam flexuosam scabriusculam summo apice denticulatam acutam sensim attenuata, nervo latiusculo subulam totam superiorem occupante; perichætialia parum latiora, longius vaginantia; theca in pedunculo elongato gracili stricto lævi erecta, angustissime perfecte cylindrica, curviuscula."—*Mitten, in lit.* Leptotrichum cylindricarpum, *C. Mueller, Bot. Zeit.* 1851, *p.* 551.

HAB. Amongst rocks: Cataract, near Launceston, *Mossman.*

3. **Trichostomum laxifolium** (Hook. fil. et Wils. Fl. N. Zeal. p. 72); caule brevissimo simplici, foliis distantibus patulis flexuosis e basi ovata amplexicauli longissime subulato-setaceis solidinerviis canaliculatis integerrimis, capsula oblonga subobliqua, operculo conico-subulato.—Dicranum flexifolium, *Hook. Musc. Exot. t.* 144.

HAB. On hills about Hobarton, on moist clayey ground. (*J. D. H.*) (*Oldfield.*)

DISTRIB. New Zealand, South Africa, South America.

4. **Trichostomum (Leptotrichum) Oldfieldii** (Mitten, in Journ. Linn. Soc. ined.); "monoicum! habitu *Leptotrichi affinis,* foliis e basi lata oblongo-ovata erecta longe subulatis patentibus apice parcissime denticulatis cellulis angustis elongatis sensim superne brevioribus firmis nervo subulam superiorem totam occupante canaliculatis, perichætialibus basi longiore latioreque elliptico-convolutis, theca in pedunculo elongato ætate rubro cylindracea arcuata, flore masculo gemmæformi brevifolioso in foliorum caulinorum axillis."

HAB. On the ground. (*Oldfield,* 154.)

"Very near to *Leptotrichum affine,* C. Mueller, in size and appearance, but with leaves about twice as wide at the oblong base, and thence subulate."—*Mitten, l. c.*

5. **Trichostomum (Leptotrichum) australe** (Mitten, in Journ. Linn. Soc. ined.); "monoicum!, caule elongato ramoso cæspitoso, foliis erecto-patentibus elongato-ovalibus ellipticisve cellulis elongatis areolatis nervo in subulam setaceam apice parce denticulatam longe excurrente, perichætialibus elongatis convolutis apice abruptis nervo longe capillari excurrente, theca in pedunculo circiter semiunciali pallide fusco ovali erecta fusca, flore masculo in ramo elongato e basi caulis fertilis egrediente terminali."—Lophiodon strictus, *Hook. fil. et Wils. in Fl. Antarct. Crypt. p.* 18. *t.* 59. *f.* 2. Didymodon longifolius, *var.* 3 penicillatus *eorund. l. c. p.* 102. D. longifolius *et* Distichium capillaceum, *in Fl. Novæ Zelandiæ enumeratæ, etiam huic speciei pertinent.*

HAB. Cheshunt, *Archer.*

DISTRIB. New Zealand, Falkland, Lord Auckland's, and Campbell's Islands.

"This most distinct Moss has been wrongly described with dioicous inflorescence and striated leaves. In the specimens collected by Mr. Archer the stems are 4 inches high, but the seta is not longer than in the shorter states of the plant. The capsules in all the specimens are too old to afford an idea of the perfect peristome, but in every other particular the structure is similar to that observable in the species of *Leptotrichum,* and not at all different from that of *Weissia stricta,* Hook. fil. et Wils. Fl. Antarct. Crypt. p. 98. t. 152. f. 4, which is also referable to the same genus."—*Mitten, l. c.*

Gen. XVII. DIDYMODON, *Br. et Schimp.*

Peristomium breve, simplex; *dentes* 16, lineari-lanceolati, secus lineam mediam integri vel pertusi et bifidi, tenerrimi, fugacissimi. *Capsula*, etc., ut in *Trichostomo*.

1. **Didymodon papillatus** (Hook. fil. et Wils. Fl. N. Zeal. p. 73. t. 85. f. 2); laxe cæspitosus, caule elongato rigidulo subramoso, ramis filiformibus erectis, foliis trifariis patenti-recurvis ovato-lanceolatis acuminulatis carinatis subsolidinerviis integerrimis utrinque papillatis, perichætialibus convolutis, capsula oblonga erecta, operculo conico-subulato.

Hab. On the ground: New Country, *J. D. H.*; Hobarton, *Oldfield*; the Hummocks, *Archer*.

Distrib. New Zealand, Swan River, Australia.

Gen. XVIII. CERATODON, *Bridel.*

Peristomium simplex; *dentes* 16, lanceolati, ad basin fere bicrures, cruribus æqualibus subulatis, basi dense superne remote articulati, articulationibus prominulis, humiditate conniventes, siccitate spiraliter incurvi. *Capsula* suberecta, oblonga, collo brevi, striata, sicca angulosa, pachyderma. *Annulus* duplex, revolubilis. *Operculum* conico-rostratum. *Calyptra* cucullata.—Florescentia *dioica*. Habitus *inter Dicranoideum et Trichostomoideum ludens.*

1. **Ceratodon purpureus** (Bridel, Br. Univ. i. 480); caule dichotome ramoso, foliis oblongo-lanceolatis carinatis margine reflexis dorso papillatis patentibus siccitate subtortilibus nervo valido subexcurrente, perichætialibus vaginantibus acuminatis, capsula in pedicello purpureo suberecta oblonga subincurva striata strumulosa siccitate cernua subhorizontali, operculo conico, peristomii dentibus in membrana basilari sat producta bifidis margine pallidioribus.—*Br. et Sch. Bryol. Eur. t.* 189. Dicranum purpureum, *Hedw. Sp. Musc. t.* 36.

Var. 2; foliis suberectis confertis siccitate strictioribus, nervo crassiore, seta elongata.

Hab. Moist burnt ground: St. Patrick's River. (*Gunn*, 1616.) (*Oldfield*, 312, 332, 129.) Back River Gully, above Wellington Falls. (*Oldfield*, 310.) New Norfolk, *J. D. H.* On rocks and stones: Western Mountains, *Archer*. Var. 2. On cow-dung, in bogs: North-west Bay, *Oldfield*.

Distrib. All parts of the world.

2. **Ceratodon stenocarpus** (Br. et Schimp. in Monogr. Ceratodon. p. 4, memoratus); dioicus, habitus *C. purpurei*, capsula in pedunculo flavido plus minus cylindrica cernua angulata evidentius strumosa, peristomii dentibus brevioribus angustioribus fuscis subunicoloribus ad basin usque fere fissis.

Hab. On the ground; frequent in the bush. (*Oldfield*, 70.)

Distrib. South Africa, Nilgherry Mountains, Mexico, Columbia.

Tribe VII. Hedwigiaceæ.

Gen. XIX. HEDWIGIA, *Ehrh.*

Peristomium nullum. *Capsula* globosa, immersa vel longius pedicellata, brevicolla, exannulata. *Operculum* subconicum vel conico-rostratum. *Calyptra* minuta, conica vel cucullata. *Flores* monoici vel dioici, masculi gemmæformes, axillares.—Folia *enervia, concava.*

§ 1. Eurystomum.—*Rhizoma repens, subterraneum. Folia laxe reticulata. Sporæ prægrandes.*

1. **Hedwigia repens** (Hook. Musc. Exot. t. 106); rhizomate repente subterraneo, foliis surculi

sterilis patulis subortundis acuminulatis, fertilis conniventibus majoribus ovatis longe acuminatis apice attenuatis integerrimis laxe reticulatis albescentibus membranaceis, capsula immersa in vaginulam brevissimam sessili sphærica ore dilatato, operculo conico-apiculato, calyptra minuta conica valde fugace, sporis prægrandibus.—*Fl. N. Zeal. p.* 92. Leptangium repens, *Mitten, in Journ. Linn. Soc. ined.*

HAB. Port Sorrell, and north side of Cataract, Launceston, *Archer*.

DISTRIB. New Zealand.

§ 1. SCLEROSTOMUM.—*Capsula scleroderma, siccitate striata; operculo rostrato. Calyptra cucullata. Folia coriacea, rigida. Florescentia dioica.*

1. **Hedwigia Humboldtii** (Hook. Musc. Exot. t. 137); caule erecto pinnatim ramoso, foliis imbricatis obovatis concavis piliformi-acuminatis rigidis coriaceis, seta longiuscula, capsula subglobosa sulcata, operculo rostrato, calyptra cucullata.—Anictangium, *Bridel, Br. Univ.; Fl. Antarct.* 135, 415.

Var. *β. australis;* caule breviore, foliis brevibus acuminatis immarginatis, seta brevi.

HAB. On moist trap rocks and in bogs: Mount Wellington, elev. 3000 feet, *J. D. H.* Penquite, *Gunn*. Cheshunt, *Archer*.

DISTRIB. New Zealand, Australia, Antarctic Islands, South America, South Africa, Guadeloupe.

§ 2. HEDWIGIA.—*Capsula immersa, lævis. Operculum conicum. Calyptra mitræformis. Florescentia monoica.*

2. **Hedwigia ciliata** (Hedw. Musc. Frond. t. 40); laxe cæspitosa, caule decumbente subramoso, foliis patentibus siccitate appressis ovatis hyalino-acuminatis acumine papilloso serrato, perichætialibus longioribus filamentoso-ciliatis, capsula immersa subsessili, operculo planiusculo, calyptra subpilosa.—Cryphæa (Dichotomaria) microcyathea, *C. Mueller, Bot. Zeit.* 1851, *p.* 564, *conf. Mitten, in Journ. Linn. Soc. ined.*

HAB. On stones: near Lake Echo, *J. D. H.* On rocks: Cheshunt, *Archer*. Near Launceston, *Mossman*.

DISTRIB. Europe, America.

3. **Hedwigia imberbis** (*Hedwigidium*, Br. et Schimp. Bryol. Eur. t. 274); cæspitosa, caule humili subramoso, foliis patentibus siccitate appressis ovatis acuminatis margine revolutis, perichætialibus vaginantibus lanceolato-acuminatis, capsula immersa pedicellata subglobosa, operculo conico, calyptra nuda.

Var. *β. Drummondii;* foliis confertioribus minus acuminatis, operculo rostellato.—Schistidium Drummondii, *Taylor, Lond. Journ. Bot.* 1846, *p.* 57 (*foliis prorsus enerviis!*).

HAB. On dry stones: near Hobarton, *J. D. H.* On rocks: Cheshunt, *Archer*.

DISTRIB. Swan River, Australia, Europe.

Our specimens agree with those from Swan River, except that the leaves are less spreading, and not subsecund.

Tribe VIII. GRIMMIÆ.

Gen. XX. GRIMMIA, *Auct.*

Peristomium simplex; *dentes* 16, majusculi, lanceolati, trabeculati, cribrosi, simplices vel apice bi-trifidi, siccitate reflexi. *Calyptra* mitræformis, basi lobata vel obliqua, cucullata.

§ 1. SCHISTIDIUM.—*Calyptra lobata, solo operculo valde dilatato insidens. Capsula immersa. Operculum una cum columella deciduum. Flores monoici.*

1. **Grimmia apocarpa** (Hedw. Musc. Frond. t. 39); laxe cæspitosa, foliis e basi erecta patentibus

ovato-lanceolatis margine reflexis apice hyalinis evanidinerviis, perichætialibus latioribus, capsula immersa elliptica pachyderma exannulata.

Var. foliis muticis.

Hab. Rocks: New Country, *J. D. H.* Bed of stream at foot of Mount Nelson, *J. D. H.* Coal River, Richmond, on stones. (*Oldfield*, 143, 66.) Mount Wellington. (*Gunn*, 1609.) On stones: the Hummocks; and on rocks: Meander River and Jackey's Plain Creek, near Cheshunt, *Archer.*

Distrib. New Zealand, Europe, America.

§ 2. Grimmia.—*Calyptra lobata vel cucullata. Capsula in pedicello curvato emersa vel exserta.*

2. **Grimmia pulvinata** (Hook. et Tayl. Musc. Brit. 38. t. 13); dense pulvinata, foliis lanceolato-oblongis superne carinatis repente piliferis evanidinerviis margine recurvis, capsula in pedicello arcuato demissa ovali striata, annulo duplice, operculo rostrato, calyptra mitræformi.

Var. *β. Africana;* humilior, capsula breviore, operculo conico mamillato brevissimo, dentibus brevioribus.—Fissidens pulvinatus, var. *β*, *Hedw. Sp. Musc. t.* 43. G. cygnicolla, *Taylor.*

Hab. On trap rocks: near Glen Leith, *J. D. H.* Seaside, South Port. (*Gunn*, 1692, 8.) (*Oldfield*, 332.) Cheshunt, and on rocks; Port Sorrell, *Archer.*

Distrib. New Zealand, Australia, Europe, Africa, America.

3. **Grimmia trichophylla** (Greville, Scot. Crypt. Fl. t. 100); dioica, laxe pulvinata, foliis lineari-lanceolatis flexuosis sensim in pilo diaphano sublævi attenuatis siccitate crispulis, capsula in pedicello cygneo subpendula ovali striata siccitate angulosa, operculo conico-rostrato, annulo lato, peristomii dentibus bifidis.

Hab. Mount Wellington, etc., on rocks. (*Gunn.*) (*J. D. H.*) (*Oldfield*, 337 *b.*) Cheshunt, *Archer.*

Distrib. Europe, Asia Minor.

4. **Grimmia funalis** (Br. et Schimp. Bryol. Eur. t. 247)?

Hab.? (Barren specimen only.) (*Gunn.*)

§ 3. Orthogrimmia.—*Capsulæ pedicellus rectus.*

5. **Grimmia leucophæa** (Greville, Trans. Wern. Soc. iv. t. 6); dioica, foliis erecto-patentibus siccitate appressis ovato-oblongis concavis piliferis margine planis tenuinerviis, capsula ovalis in pedicello breviter exserto erecta microstoma, operculo recte rostrato, annulo lato, peristomii dentibus bi-trifidis cribrosis.—G. campestris, *Hook. Musc. Exot. t.* 129.

Hab. On moist rocks: near Hobarton, *J. D. H.* On stones: the Hummocks, *Archer.*

Distrib. Europe, North America, Africa, Australia.

Gen. XXI. PTYCHOMITRIUM, *Br. et Schimp.*

Peristomium simplex; *dentes* 16, e basi lanceolata subulati, in crura inæqualia fissi, vicinis æqualibus. *Calyptra* sulcata, nuda, basi lobata. *Capsula* ovalis vel oblongo-cylindrica, brevicolla. *Operculum* longum, rectirostrum. *Flores* monoici, masculi axillares vel terminales, gemmæformes.

1. **Ptychomitrium acutifolium** (Hook. fil. et Wils.); caule humili incrassato ramoso, foliis confertis patenti-incurvis siccitate intortis lanceolato-subulatis acutis planiusculis solidinerviis basi pellucide areolatis, capsula majuscula ovali erecta annulata, peristomii dentibus breviusculis læviusculis subfissis membrana basilari connexis. (Tab. CLXXIII. Fig. 2.)

Hab. On banks and trap rocks near the Derwent, Glen Leith, very rare, *J. D. H.* On rocks: Port Sorrell, *Archer.*

Distrib. South Australia. (*C. Prentice, Esq.*)

Stem 2 lines long. *Leaves* crowded, yellowish-green; margin subreflexed; upper areolæ quadrato-punctiform, lower ones rectangular. *Seta* 2 lines, pale. *Annulus* large. *Spores* brownish. *Male flowers* aggregate, gemmæform, axillary.—Closely allied to *P. crassinervium* (Schimper), but differs in the peristome, and in the larger areolæ. *P. Drummondii* is smaller, and has no annulus; and from *P. crispata* our Moss differs in the acute tapering leaves. —Plate CLXXIII. Fig. 2; 1, fruiting specimen; 2, leaf; 3, capsule; 4, teeth; 5, calyptra:—*all magnified.*

2. **Ptychomitrium serratum** (Mitten, in Linn. Soc. Journ. ined.); "*P. polyphyllo* minor, foliis patenti-recurvis e basi ovata lanceolatis sensim acutis margine apicem versus serrato inferne recurvo, nervo percurrente, cellulis basi paucis elongatis mox in rotundatis a sese remotiusculis diametro circiter $\frac{1}{1000}$ unciæ metientibus transeuntibus, perichætialibus caulinis similibus, theca in pedunculo quadrilineari ovali-cylindrica, operculo subulato subæquilongo, peristomio dentibus longiusculis rubris asperulis profunde fissis basi geminatim approximatis, calyptra *P. crispati.*" (Tab. CLXXIII. Fig. 3.)

Hab. On rocks: north side of the Cataract, Launceston, *Archer.*

In size and habit so nearly resembling *P. acutifolium* as to be readily mistaken for it, but safely distinguished by the serrated leaves, which are shorter and less narrowed towards the apex than those of *P. polyphyllum. Mitten, l. c.*—Plate CLXXIII. Fig. 3; 1, capsule, with calyptra; 2, leaf; 3, teeth:—*all magnified.*

Gen. XXII. RACOMITRIUM, *Bridel.*

Peristomium simplex; *dentes* 16, bi-trifidi; *crura* nunc filiformia, longissima, ad basin usque libera, nunc breviora, lineari-subulata, inæqualia, irregulariter coalita. *Capsula* in pedicello strictiusculo exserta, elliptica oblongave, lævis, ore angustata, annulata. *Operculum* conico-subulatum. *Calyptra* conico-mitræformis, ad apicem subulata, basi membranacea pluries fissa, apice solida, papillosa, operculum tegens.—Florescentia *dioica.* Folia *evanidinervia, carinata, margine recurvo.* Reticulatio *ex areolis superne quadratis vel elongato-sinuosis, inferne longioribus, angustis, valde sinuosis.* Habitus *a* Grimmoideo *ad* Hypnoideum *transitionem metiens.* Habitatio *terrestris et rupestris.*

1. Dryptodon.—*Plantæ dichotome ramosæ, innovationibus simplicibus, fastigiatis.*

1. **Racomitrium (Dryptodon) crispulum** (Hook. fil. et Wils. Fl. Antarct. 124. t. 57. f. 9); foliis erecto-patentibus subrecurvis ovato-oblongis acuminatis carinatis margine basi reflexa apice subdiaphanis, nervo continuo, seta perbrevi, capsula elliptico-oblonga, operculo conico-subulato, peristomii dentibus bifidis siccitate reflexis.—*Fl. N. Zeal. p.* 75.

Var. 1; foliis brevioribus muticis.

Var. 2; foliis longioribus muticis.

Hab. Var. 1. On trap rocks near Glen Leith, rare. On stones near Lake Echo, *J. D. H.* Var. 2. St. Patrick's River. (*Gunn,* 1608, 1627, 21.) Rocks: North and South Huon. (*Oldfield,* 62.) On rocks and stones: rivulet near Cumming's Head, Western Mountains, *Archer.*

Distrib. Antarctic Islands, New Zealand.

2. Racomitrium.—*Plantæ irregulariter ramosæ, ramulis brevibus, innovationibus haud fastigiatis.*

2. **Racomitrium symphyodon** (*Grimmia,* C. Mueller, Syn. Musc. i. 809); caule gracili elongato, ramulis subfasciculatis gracilibus, foliis patentibus subsecundis siccitate erectis ovato-lanceolatis acuminatis hyaline apiculatis margine inferne recurvis, perichætialibus acutiusculis, capsula in pedunculo flavido tenuissimo breviusculo cylindrica microstoma, peristomii dentibus brevibus cruribus cohærentibus, calyptra apice scabriuscula.—R. fasciculare, var. 2 and 3, *Hook. fil. et Wils. in Fl. Antarct. p.* 96. Grimmia

emersa, *C. Mueller, Bot. Zeit.* 1851, *p.* 562; *conf. Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXIII. Fig. 4.)

HAB. On dry stones: at the back of Hobarton, *J. D. H.* On rocks: the Falls, *Archer.* Mount Wellington, *Mossman.*

DISTRIB. Hermite Island, Cape Horn.

PLATE CLXXIII. Fig. 4; 1 and 2, leaves; 3, capsule and operculum; 4, ditto, with operculum removed; 5, teeth; 6, calyptra:—*all magnified.*

3. **Racomitrium heterostichum** (Hedw. Musc. Frond. ii. 70. t. 25); caule fasciculatim ramoso, foliis patentibus subsecundis lanceolato-acuminatis in pilum plus minus elongatum hyalinum flaccidum productis sulcatis margine recurvis, areolis superne quadratis, capsula elliptico-cylindracea et obovato-oblonga microstoma, peristomii dentibus profunde bifidis.

Var. *β. alopecurum;* foliis brevipilis, capsula minori brevi-pedicellata. (*Gunn,* 1627 *b.*) (*Oldfield.*)

Var. *γ. gracilescens;* foliis obtusis. (*Gunn,* 1627 *a.*)

HAB. On stones and rocks, abundant, *Gunn, Oldfield, etc.*

DISTRIB. Europe, Falkland Islands, New Zealand.

4. **Racomitrium lanuginosum** (Hedw. Musc. Frond. iii. 3. t. 2); caule elato fasciculatim ramoso, foliis patentibus recurvis elongatis lanceolato-acuminatis apicem versus membranaceo-marginatis papillosis eroso-dentatis et appendiculatis in pilum hyalinum productis, capsula in pedicello breviusculo scabro minuta ovata, peristomii dentibus in crura filiformia bipartitis.

Var. *pruinosum;* foliis apice inciso-serratis valde incanis.

HAB. Mount Wellington. (Barren specimens.) (*Gunn,* 20, 1580.)

DISTRIB. Falkland Islands, Fuegia, New Zealand, and all parts of the world.

Tribe IX. ENCALYPTEÆ.

Gen. XXIII. ENCALYPTA, *Schreb.*

Calyptra longe cylindrico-campanulata, apice subulata, firma, capsulam omnino tegens. *Peristomium* nullum, simplex, v. duplex; *externum,* dentes 16, subulati; *internum,* membrana tenera dentibus adglutinata in cilia producta. *Capsula* cylindrica, erecta. *Operculum* longirostre.

1. **Encalypta vulgaris** (Hedw. Sp. Musc. p. 60); foliis ligulatis evanidinerviis, capsula plerumque gymnostoma, calyptra ad capsulæ collum vel infra producta basi integra.

Var. *β. obtusa;* foliis muticis obtusis.

HAB. On banks? A scrap only, growing with *Tortula pungens* and *T. Australasiæ.* (*Lyall.*) (*Gunn.*)

DISTRIB. Europe.

2. **Encalypta australis** (Mitten, in Journ. Linn. Soc. ined.); "monoica, *E. vulgari* simillima, foliis inferioribus ligularibus, comalibus subelliptico-spathulatis obtusiusculis nervo percurrente dorso apice parce denticulato scabrove margine ob papillarum prominentiam erosula, theca cylindrica lævi gymnostoma operculo subulato subæquilonga, calyptra apice lævi."

HAB. Near the Cataract, Launceston, and on the fossiliferous limestone near Cheshunt, *Archer.*

DISTRIB. New Zealand.

Differs from *E. vulgaris* in the less rounded apices of its leaves, and smooth point of the calyptra.—*Mitten, l. c.*

Tribe X. ORTHOTRICHEÆ.

Gen. XXIV. MACROMITRIUM, *Bridel.*

Peristomium duplex vel simplex, interdum 0; *externum* intus sub ore capsulæ adnatum, dentes 16, per paria plus minus approximati, plani, lanceolati; *internum*, membrana multifida lacera. *Calyptra* conico-mitræformis, longitudinaliter plicata sulcatave, basi haud appendiculata, inferne in plures lacinias partita, glabra vel pilosa. *Capsula* ovata, basi attenuata, vix apophysata, æqualis, erecta, exannulata, longipedunculata, pachyderma, ore siccitate sæpius plicis octo contracta. *Operculum* rectum, rostratum.—Folia *multifaria, lanceolato-oblonga;* areolis *minimis, circularibus, punctiformibus.* Caulis *repens;* surculis *erectis, confertis.*

1. **Macromitrium microstomum** (Hook. et Grev. Brewst. Ed. Journ. Sc. v. p. 114. t. 4); foliis patulis subincurvis ligulato-lanceolatis obtusis apiculatis papillosis siccitate crispatis laxe areolatis nervo rubello, capsula ovali lævi apice plicato, calyptra pilosiuscula.

HAB. Hobarton, etc.; rocks, at an altitude of 1400 feet. (*J. D. H.*) (*Gunn*, 29.)

DISTRIB. New Zealand.

2. **Macromitrium Reinwardti** (Schwægr. Suppl. ii. p. 69. t. 173); monoicum, foliis patentibus incurviusculis siccitate crispulis e basi lanceolata anguste acuminatis canaliculatis areolis basi elongatis superne guttulatis, perichætialibus late lanceolatis acuminatis excurrentinerviis, capsula in pedunculo elongato ovata brevicolla lævi ore plicata, peristomii dentibus 16 angustis, calyptra glabra.

HAB. (Specimen very scanty and imperfect.) (*Gunn.*)

DISTRIB. Java.

3. **Macromitrium pusillum** (Mitten, in Journ. Linn. Soc. ined.); "dioicum?, *M. microstomo* simillimum, foliis siccitate spiraliter tortis madore patentibus lineari-lanceolatis apice breviter apiculatis nervo fusco sub apice evanido carinatis integerrimis cellulis basi angustis elongatis superioribus rotundatis diametro circiter $\frac{1}{3000}$ unciæ metientibus breviter papillosis distinctis, perichætialibus internis brevioribus ovatis acuminatis, theca in pedunculo circiter trilineari ovali plicata, ore intensiore colorato, calyptra nuda." (TAB. CLXXIII. Fig. 5.)

HAB. On stones: Cataract Hill, *Archer.*

Leaves longer and narrower than those of *M. microstomum*, with cells far larger, those of the last-named species having a diameter of $\frac{1}{5000}$ of an inch. *Mitten, l. c.*—PLATE CLXXIII. Fig. 5; 1 and 2, leaves; 3, capsule; 4, calyptra:—*all magnified.*

4. **Macromitrium Archeri** (Mitten, in Journ. Linn. Soc. ined.); "*M. hemitrichodi* simillimum, foliis siccitate tortis subcrispatis madore patentibus inferne ellipticis inde lanceolatis obtusiusculis nervo excurrente carinatis brevissime apiculatis margine minutissime eroso cellulis basi pro spatio brevi elongatis mox in rotundatis transeuntibus papillosis apicem versus obscurioribus, perichætialibus brevioribus duplo latioribus acutis, theca in pedunculo tri-quadrilineari elongato ovali sub ore intensiore colorato plicata, peristomio nullo?, operculo subulato, calyptra nuda." (TAB. CLXXIII. Fig. 6.)

HAB. On trees: Cheshunt, *Archer.* On dead branches of trees: Kermandie Rivulet, *Oldfield.*

Fulvous. In size and general appearance scarcely different from *M. hemitrichodes*, to which, at least in part, belongs *M. amœnum*, Hornsch., according to authentic specimens, but in the present the leaves, although agreeing in form, have their cells more widely separated, rather larger, and not obscure, as in *M. hemitrichodes*, in which too the leaves are smoother. *Mitten, l.c.*—PLATE CLXXIII. Fig. 6; 1 and 2, leaves; 3, capsule and calyptra; 4, ditto, with operculum:—*all magnified.*

5. **Macromitrium microphyllum** (Hook. et Grev. in Brewst. Journ. Sc. i. p. 121. t. 6); ramis filiformibus, foliis ovato-lanceolatis patentibus basi carinatis bistriatis pellucidis siccitate strictis appressis, capsula ovali-oblonga subpyriformi læviter sulcata, peristomio brevissimo indiviso.—*Mitten, in Journ. Linn. Soc. ined.*

HAB. On trees, in creeks and damp woods, *Archer.*

DISTRIB. New Zealand, Australia, South Africa.

Gen. XXV. ORTHOTRICHUM, *Hedwig.*

Peristomium duplex vel simplex, rarius 0; *externum* intus sub ore capsulæ adnatum, dentes 16, plerumque per paria connati, siccitate erecti, patentes vel reflexi; *internum,* cilia 8 vel 16. *Capsula* immersa vel exserta, erecta, pyriformis, collo plus minus elongato, striata, siccitate costata, exannulata. *Operculum* conico-rostellatum. *Calyptra* magna, campanulata, plicata, basi crenato-lacera, in plurimis recte pilosa.—Florescentia *plerumque monoica,* fl. masc. *gemmæformis.* Caules *pulvinati, subrepentes.*

1. **Orthotrichum crispum** (Hedw. Sp. Musc. p. 162); foliis siccitate cirrhato-crispatis, capsula clavata sicca evacuata elongata sub ore hiante constricta sulcata fuscescente.—*Bruch et Schimp. Bryol. Eur. t.* 228.

Var. foliis confertis suberectis minus acutis angustinerviis, areolis laxioribus pellucidis, vaginula epilosa, seta longiori, calyptra parva.

HAB. St. Patrick's River. (*Gunn,* 1614.) Trunks of trees: Mount Wellington, rare. (*J. D. H.*)

DISTRIB. Europe.

2. **Orthotrichum luteum** (Mitten); "monoicum, dense pulvinatum, fulvo-luteum, foliis siccitate crispatis madore patentibus e basi obovata concava erectiuscula lineari-lanceolatis nervo flavo sub apice evanido carinatis, cellulis basi utrinque ad margines ovatis circiter quadriseriatis oblongis parallelogrammaticis hyalinis interioribus angustissimis elongatis luteis superioribus rotundis diametro $\frac{1}{3000}$ unciæ metientibus in seriebus 10–12 inter marginem et nervum in folii medio dispositis papillosis margine minute crenulato et, ubi basis in partem superiorem angustatur, recurvo, perichætialibus lanceolatis latioribus, vaginula glabra, theca in pedunculo vix duplo longiore ovali-cylindrica plicata, collo elongato crassiusculo, operculo convexo brevi-rostrato, peristomii dentibus 8 bigeminatis ciliis 8 angustis tertio brevioribus, calyptra ramentis exstantibus elongatis pilosa."—Ulota lutea, *Mitten, in Journ. Linn. Soc. ined.*

HAB. On trees: rivulet behind Cumming's Head, Western Mountains, *Archer.* Mount Wellington, *Mossman.*

DISTRIB. New Zealand.

Corresponding in size with *O. crispum,* but with leaves of a different form at the base, erose margins, and cells in the upper portion larger and further apart. The capsule is also thinner.—*Mitten, l. c.*

3. **Orthotrichum Tasmanicum** (Hook. fil. et Wils. Lond. Journ. Bot. vii. p. 27. t. 1. f. C); foliis patulis subrecurvis siccitate suberectis vix crispis lanceolato-subulatis margine reflexis, seta longiuscula gracili, capsula elliptica oblonga siccitate striata, peristomii interni ciliis 8 latissimis carinatis integris conniventibus, calyptra pallida nitida pilosiuscula, vaginula pilosa.

HAB. On twigs of bushes and decayed wood: Launceston. (*Gunn,* 1629.) Johnny's Creek, New Norfolk, and Hobarton. (*Oldfield,* 215, 273.) (*Mossman.*) Falls Run, *Archer.*

4. **Orthotrichum Lawrencei** (Mitten, in Journ. Linn. Soc. ined.); "monoicum, habitu staturaque *O. leptocarpi,* foliis patentibus e basi late ovali breviter late lanceolatis acutis nervo sub summo apice

evanido carinatis marginibus superne erosulis inferne incurvis cellulis omnibus conformibus minutis rotundis minute papillosis, perichætialibus caulinis similibus, internis basi cellulis paucis longioribus, theca in pedunculo dimidio breviore sensim attenuata elliptico-cylindracea siccitate ovali-cylindrica fere ad basin plicata, operculo brevi-rostellato, peristomio dentibus 8 flavidis siccitate reflexis, ciliis 8 latis colore structuraque dentibus simulantibus." (TAB. CLXXII. Fig. 5.)

HAB. Tasmania, *Lawrence.*

From *O. leptocarpum*, B. and S., this species differs in the firmer plicate capsule and acute leaves; from *O. Tasmanicum* and *O. speciosum*, Nees, in the very much wider leaves, not patent or divergent from a suberect base, having elongated narrow cells, but uniform in their direction throughout their length, and composed of cells everywhere minute and round. The cilia, like those of *O. Tasmanicum*, agree in substance, size, and colour with the teeth of the external peristome. The calyptra has not been seen. *Mitten, l. c.*—PLATE CLXXII. Fig. 5; 1, leaf; 2, theca; 3, peristome:—*all magnified.*

Tribe XI. ZYGODONTEÆ.

Gen. XXVI. ZYGODON, *Hook.*

Peristomium duplex, simplex, vel 0; *externum*, dentes 16, per paria connexi, plani, siccitate reflexi; *internum*, cilia 8 vel 16, dentibus alternantia, linearia, hyalina, horizontalia. *Capsula* erecta, clavato-pyriformis, striata, pedicellata vel immersa, exannulata. *Operculum* oblique rostratum. *Calyptra* cuculliformis, obliqua.

a. *Folia integra.*

* *Peristomium simplex.*

1. **Zygodon anomalus** (Dz. et Molkb. Ann. Sc. Nat. 1844, p. 316); hermaphroditus, caule humili parce ramuloso flavido-viridi, foliis recurvo-patentibus undulato-flexuosis siccitate laxe crispato-contortis oblongo-lanceolatis carinatis margine subplanis nervo in apiculum breve excurrente, perichætialibus brevioribus lanceolato-acuminatis erectis, capsula in pedicello luteo-rubello flexuoso erecta subpyriformi-ovali sulcata siccitate ore contracta pallide fusca, operculo conico-rostrato incurvo breviori, peristomio simplici interno.—Z. Reinwardti, *Mitten, in Journ. Linn. Soc. ined.*

HAB. Gully near the Huon, on decayed wood, with *Leptostomum inclinans.* (*Oldfield*, 288.) On trees: Stackhouse Falls, *Archer.*

DISTRIB. Java.

Plant ½ inch in height. *Seta* ⅓ inch. *Capsule* larger than usual, almost elliptical-oblong, pale. *Operculum* pale-yellow. *Calyptra* reddish-brown, large, reaching above halfway down the capsule, substriate, coriaceous. *Peristome* very fugacious.

2. **Zygodon intermedius** (Bruch et Schimp. Br. Eur. iv. p. 9); dioicus, caule gracilente elatiore subramoso, foliis laxis erecto-patentibus lanceolato-lingulatis acutiusculis, peristomio simplici interno 8-ciliato.—Z. conoideus, β elongatus, *Hook. et Grev. Brewst. Journ. Sc.* 132. Z. Menziesii, *Taylor.*

HAB. On trees? (*Lawrence*, 24). (*Spence and Neil.*) Cheshunt, *Archer;* Mount Wellington, *Mossman.*

DISTRIB. New Zealand.

** *Peristomium duplex.*

3. **Zygodon Brownii** (Schwægr. Suppl. t. 317 b); dioicus, caule ramoso fastigiato, foliis squarrosis oblongis acutis, peristomio duplici.

HAB. Common on rocks, bark of trees, etc., throughout the Island.

DISTRIB. New Zealand.

4. **Zygodon minutus** (C. Mueller et Hampe, Plant. Muell. in Linnæa, 1855, p. 209); "dioicus, dense cæspitosus, humilis, flavescens, caule tenello brevissimo densifolio innovando subramoso, foliis caulinis dense imbricatis madore et siccitate strictis anguste oblongo-lanceolatis acuminatis carinatis margine convexis nervo valido flavido excurrente, e cellulis rotundatis incrassatis lævibus basi paucis laxis parenchymaticis areolatis, perichætialibus angustioribus, theca in pedicello brevi tenero flavido erecta pyriformi-ovali operculo conico obliquo acuminato instructa octo-sulcata, peristomii dentibus exterioribus arcte conjunctis brevissimis 16-geminatis, ciliis 8 internis in membrana tenerrima reticulata."—*Mitten, in lit.*

HAB. On trees, *Gunn.*

DISTRIB. Australia.

Similar to *Z. Menziesii* (*Codonoblepharum*), Schwægr., but easily distinguished by the excurrent nerve of its more sharply pointed leaves and different peristome. *Mitten, l. c.*

b. *Folia dentata.*

5. **Zygodon cyathicarpus** (Montagne, Ann. Sc. Nat. Cent. v. p. 30, et Fl. Chil. Crypt. 132. t. 3. f. 1); monoicus, foliis patentibus subrecurvis lineari-lanceolatis acutis carinatis remote dentatis siccitate crispato-tortuosis, perichætialibus capsulam superantibus, seta perbrevi, capsula cyathiformi gymnostoma striata, operculo convexo oblique rostellato.—Gymnostomum linearifolium, *Taylor, in Lond. Journ. Bot.* v. *p.* 42. Didymodon cyathicarpus, *Mitten, in Journ. Linn. Soc. ined.*

Var.; foliis siccitate minus crispatis pellucidinerviis, areolis majoribus quadratis.

HAB. On the ground: Dromedary, New Norfolk. (*Oldfield,* 139.) Cheshunt, *Archer.*

DISTRIB. South America, New Zealand, South Africa.

Gen. XXVII. CODONOBLEPHARUM, *Schwægr.*

Peristomium duplex; *externum* Zygodontis; *internum,* cilia 16, e membrana basilari brevissima in campanulæ formam elevata. *Calyptra* cuculliformis.

1. **Codonoblepharum Menziesii** (Schwægr. Suppl. t. 137); caule erecto subdiviso fastigiatim ramoso, foliis confertis erectiusculis lingulatis integerrimis solidinerviis, capsula pyriformi infra orem contracta sulcata, operculo conico-rostellato.—Zygodon Drummondii, *Taylor, MSS.* Z. Menziesii, *Mitten, in Journ. Linn. Soc. ined.*

HAB. On the bark of trees; on the ground, near the sea. (*Gunn.*) (*Oldfield,* 290.) On trees, in open ground, and in the forests. Cheshunt, *Archer.*

DISTRIB. New Zealand, Australia.

Tribe XII. BRYACEÆ.

Gen. XXVIII. LEPTOSTOMUM, *R. Brown.*

Peristomium simplex, membranaceum, demum annulare, subdivisum, e membrana interiore ortum. *Capsula* clavato-pyriformis, suberecta vel cernua, longipedunculata. *Operculum* brevissimum, subconicum. *Calyptra* cucullata.—Florescentia *dioica:* fl. masc. *terminalis, capituliformis.* Caules *dense cæspitosi, radiculoso-tomentosi.* Folia *ovato-lanceolata, pilifera, crassinervia, areolis circularibus.*

1. **Leptostomum inclinans** (R. Br. in Linn. Trans. x. p. 321. t. 23); foliis erecto-patentibus laxius

imbricatis ovato-oblongis obtusis piliferis siccitate erectis margine reflexis, capsula inclinata obovato-clavata, operculo conico-hemisphærico.—*Schwægr. Suppl. t.* 213. Gymnostomum inclinans, *Hook. Musc. Exot. t.* 168. L. flexipile, *C. Mueller; conf. Mitten, in Journ. Linn. Soc. ined.*

HAB. On moist rocks: top of Grass-tree Hill, etc., near Hobarton. (*Gunn*, 22, 1586.) (*J. D. H.*) (*Lawrence*, 259.) (*Oldfield.*) Cheshunt, *Archer.*

DISTRIB. New Zealand.

2. **Leptostomum macrocarpum** (R. Br. l. c. p. 322); foliis elliptico-oblongis subobovatis concavis margine revolutis pilo ramoso terminatis, capsula erecta ovato-oblonga microstoma, operculo obtuse conico.—Bryum macrocarpon, *Hedw. Musc. Frond.* iii. *t.* 10.

HAB. Mount Wellington, *R. Neill.*

DISTRIB. Tahiti, New Zealand, Australia.

Gen. XXIX. LEPTOTHECA, *Schwægr.*

Peristomium duplex; *externum,* dentes 16, lanceolato-lineares, erecti; *internum,* membrana tenera in cilia totidem linearia cum ciliorum interpositorum rudimentis fissa. *Capsula* cylindrica, erecta, æqualis. *Calyptra* dimidiata.

1. **Leptotheca Gaudichaudi** (Schwægr. Suppl. t. 137); caule erecto ramosiusculo, foliis laxis patulo-erectis oblongis e nervo excurrente cuspidatis grosse dentatis, capsula erecta angustata cylindrica.—Aulacomnion Gaudichaudii, *Mitten, in Kew Miscel.* 1857, *p.* 262; *idem in Journ. Linn. Soc. ined.*

HAB. On moist rocks: Mount Wellington. Johnny's Creek, Dry Hill, Back River. (*Oldfield,* 226, 136.) (*J. D. H.,* 1335.)

DISTRIB. Australia.

Inflorescence certainly dioicous (contr. Schwægr.). *Perichætial leaves* longer and narrower than the rest. *Annulus* large, adhering to the mouth of the capsule. *Outer peristome* pale-yellow, erect.

Gen. XXX. MNIOPSIS, *Mitten.*

Acrocarpica. *Folia* cellulis hexagonis areolata. *Peristomium* externum dentibus 16, internum processibus alternantibus in membrana exsertis. *Calyptra* mitræformis, parva.

1. **Mniopsis Plumula** (Mitten, in Journ. Linn. Soc. ined.); "dioica, gregaria, caulibus simplicibus erectis inferne foliis minutis remotis superne majoribus in caule fertili horizontaliter insertis patentibus ovatis, comalibus perichætialibusve ligulatis obtusis in caule sterili distichaceis verticalibus oblongo-ovatis acutis obtusisve patentibus decurrentibus omnibus integerrimis nervo sub apice evanido, cellulis hexagonis limitibus crassiusculis, theca in pedunculo bilineari gracili ovali-cylindrica æquali, operculo subulato recto, peristomio externo dentibus longissimis angustis rubris siccitate incurvis cirrhatisque interno processibus ciliiformibus brevibus in membrana brevi exserta, flore masculo fœminei simili in caulium apicibus parvo capituliforme, antheridiis minutis brevibus, paraphysibus nullis." (TAB. CLXXIII. Fig. 7.)

HAB. Below the quarry, Ovens Creek, *Archer;* sent also in a barren state by Mr. Oldfield.

Stems from one-fourth to half an inch high, dull-green, considerably resembling some small species of *Fissidens;* its affinity is however to *Schistostega,* with which it agrees in the vertical insertion of the leaves of its barren stems, but recedes in the presence of a rather stout nerve and the regular hexagonal cells. In the structure of its peristome it approaches to *Aulacomnion.* The calyptra is smaller in proportion than that of *Tetraphis* or *Tetrodontium. Mitten, l. c.*—PLATE CLXXIII. Fig. 7; 1–3, plants; 4, leaf; 5, capsule; 6, peristome:—*all magnified.*

Gen. XXXI. ORTHODONTIUM, *Schwægr.*

Peristomium duplex, infra capsulæ orificium oriens; *externum,* dentes 16, lanceolato-subulati, siccitate infra orificium sæpe inflexi; *internum,* cilia 16, dentibus alternantibus, e basi brevi subcarinata dilatata filiformia. *Capsula* clavato-pyriformis, in pedicello tenui suberecta vel cernua, exannulata, symmetrica, leptoderma, laxe areolata. *Operculum* breve, conico-rostellatum. *Calyptra* parvula, cuculliformis, fugax. —Musci *graciles, cæspitosi, habitu* Bryis angustifoliis *affines.* Florescentia *monoica;* fl. masc. *gemmæformes, axillares, sæpius aggregati.* Folia *longiuscula, lineari lanceolata, tenuia, laxe areolata;* areolis *subparallelogrammaticis, evanidinerviis.*

1. **Orthodontium australe** (Hook. fil. et Wils. Fl. Antarct. p. 106. t. 153. f. 5); caule ramoso fastigiato humili, foliis erecto-patentibus subrecurvis anguste linearibus subflexuosis nervo subcontinuo, capsula suberecta oblonga brevicolla, operculo rostellato.

Hab. On dead timber: Kangaroo Bottom. On dry trunks of trees: Mount Wellington, elev. 2000 feet. Back River, Brown's River. (*J. D. H.*) (*Oldfield,* 134, 227, 225, 330.) On dead trees: West-end rivulet, *Archer.*

Distrib. Falkland Islands, Hermite Island.

Gen. XXXII. LEPTOBRYUM, *Br. et Schimp.*

Peristomium Bryi. *Capsula* in pedicello elongato tenaci flexuoso inclinata vel pendula, e collo longo angusto subito inflato-ovalis, leptoderma, vernicoso-nitida, luteo-rufa, sicca ore contracta, annulata. *Operculum* convexum, apiculatum. *Calyptra* perangusta. *Flores* hermaphroditi.—Plantæ *simplices, ex infima basi innovantes.* Folia *media lanceolata, costata, summa in comam polyphyllam congesta, longissima, e basi lanceolata longe et flexuose subulata, costa lata maximam partem laminæ occupante excedente.*

1. **Leptobryum pyriforme** (Br. et Schimp. Bryol. Eur. t. 355).—Bryum pyriforme, *Hedw. Hist. Musc.* i. *t.* 3. *f.* 12. Webera pyriformis, *Hedw. Musc. Frond. t.* 3.

Hab. Back River Gully, on rotten wood, with *Ceratodon purpureus.* (*Oldfield,* 312.)

Distrib. Europe, Asia, America.

Gen. XXXIII. BRACHYMENIUM, *Hooker.*

Peristomium duplex; *externum,* dentes 16, lanceolato-lineares; *internum,* membrana plicata brevis, apice dilacerato in cilia sexdecim irregulariter fissa. *Calyptra* cuculliformis. *Capsula* clavato-pyriformis, æqualis, annulata, suberecta.

1. **Brachymenium lanceolatum** (Hook. fil. et Wils.); monoicum, caule breviusculo, innovationibus crassiusculis, foliis erecto-patentibus flaccidis siccitate subflexuosis lineari-lanceolatis acuminatis carinatis integerrimis laxe pellucide areolatis nervo continuo, seta longa, capsula suberecta ovali-pyriformi brevicolla, operculo conico brevi. (Tab. CLXXIII. Fig. 8.)

Hab.? (Specimen scanty.) (*Gunn.*)

Very like *Acidodontium Kunthii,* Hsch., but differing in the inflorescence.—*Leaves* twice as long, with larger areolæ, yellowish. *Capsule* shorter. *Teeth of the peristome* pale, gradually tapering, trabeculate externally. *Inner peristome* nearly as long as the outer. *Annulus* yellow, adhering to the mouth of the capsule. *Male and female flower* contiguous. *Seta* red.—Plate CLXXIII. Fig. 8; 1 and 2, leaves; 3, capsule; 4, peristome:—*all magnified.*

Gen. XXXIV. MIELICHHOFERIA, *Hornsch.*

Fructificatio in ramulis brevibus secundariis nonnunquam ad plantæ basin nascentibus terminalis. *Peristomium* plerumque simplex, rarius duplex vel nullum; *externum* sæpius nullum; *internum*, cilia 16, articulata, pallida, subplana, in membrana basilari brevi posita, vel libera. *Capsula* pyriformis, cernua, annulata. *Calyptra* cucullata.—Florescentia *synoica, monoica, vel dioica.*

1. **Mielichhoferia Eckloni** (Hsch. in Linn. 1841, p. 118); monoica, caule fertili subbasilari brevissimo, innovationibus simplicibus erectis elatis basi nudis superne dense foliosis, foliis suberectis lanceolatis ovato-lanceolatis acuminatis planiusculis apice serrulatis evanidinerviis, perichætialibus minoribus erectis, seta elongata, capsula cernua obovato-pyriformi hinc gibba, peristomio duplici.—Schizhymenium bryoides, *Harvey, in Hook. Ic. Plant. t.* 202; *Schwægr. Suppl. t.* 317.

Hab. On the ground: Gullies Road, Brown's River. (*Oldfield.*) (*Gunn,* 25 *b.*) Cheshunt, *Archer.*

Distrib. South Africa.

Some of the Cape of Good Hope specimens, though not in good condition, distinctly show a double peristome. —*Outer teeth* sixteen, imperfect. *Inner peristome* sixteen filiform cilia connected occasionally at the top by trabeculæ, and united at the base into a narrow membrane. *Annulus* large.

Gen. XXXV. BRYUM, *Dillen.*

Peristomium duplex; *externum,* dentes 16, æquidistantes, simplices, lanceolati, dorso linea longitudinali exarati, intus transversim lamellati, valde hygroscopici, sicci incurvi; *internum,* membrana in processus 16 carinatos cum dentibus alternantes fissa, ciliis filiformibus interjectis, dentibus oppositis vel nullis. *Capsula* pyriformis vel clavata, pendula vel inclinata, collo brevissimo vel elongato, plerumque annulata. *Operculum* convexum, apiculatum, breve.—Florescentia *dioica, monoica, vel synoica;* antheridia *paraphysibus filiformibus immixta.* Folia *ovata, lanceolata, plerumque integra, costata, cellulis rhomboideis.* Caules *perennes, cæspitosi, innovationibus simplicibus cauli similibus proliferi.*

§ 1. Webera.—*Plantæ graciles, simplices, e basi innovantes. Folia lanceolata, superiora multo longiora.*

1. **Bryum nutans** (Schreb. Fl. Lips. p. 81); monoicum, caule breviusculo, foliis superioribus elongato-lanceolatis apice serratis inferioribus ovato-lanceolatis integerrimis, capsula nutante vel pendula oblongo-pyriformi, operculo majusculo convexo papillato, antheridiis in foliorum perichætialium axillis per paria insertis.—*Bryol. Europ. t.* 347.

Hab. Western Mountains. (*Gunn,* 1588.) Mount Wellington. (*Oldfield,* 306, 126.) Roadside, Splitters Hill, *Archer.*

Distrib. Lord Auckland's Group, Hermite Island, North Asia, America, Europe.

§ 2. Bryum.—*Plantæ sub apice prolifero innovantes.*

a. *Flores synoicæ* (♀ *et* ♂ *immixtis*).

2. **Bryum intermedium** (Web. et Mohr, Bot. Tasch. 283); foliis ovato- oblongo- et elongato-lanceolatis nervo excedente longius cuspidatis apice subdenticulatis margine recurvis, capsula clavato-pyriformi incurviuscula sicca sub ore haud coarctata, operculo acuto persistente.—*Bruch et Schimp. Bryol. Europ. t.* 356.

Hab. Turf-banks: Glen Leith, *J. D. H.*

Distrib. New Zealand?, Europe.

3. **Bryum Tasmanicum** (Hampe, De Plant. Muell. Linnæa, 1852); synoicum, caule humili cæspitoso, foliis elliptico-lanceolatis nervo excurrente in acuminem subpiliformem producto marginibus integerrimis recurvis, theca in pedunculo elongato nutante ovali collo æquilonga.—*Mitten, in Journ. Linn. Soc. ined.*

HAB. Cheshunt, *Archer*. South Esk River, *Mossman.*

Habitus *B. pallescentis* sed hermaphroditum; a *B. bimo* differt, foliis longioribus, magis acuminatis, nervo longe excurrente.—*Hampe.*

Mr. Archer's specimens are too old to show the true structure of the internal peristome, but it appears to be that of *Pohlia.—Mitten, in lit.*

4. **Bryum bimum** (Schreb.); hermaphroditum, foliis patentibus ovato-lanceolatis carinatis margine reflexis nervo excurrente mucronatis siccitate subtortilibus, capsula pendula obovato-pyriformi, operculo majusculo convexo mamillato.—*Fl. N. Zeal. p.* 85; *Mitten, in lit.*

HAB. Cheshunt, *Archer.*

DISTRIB. New Zealand, Europe, North America.

5. **Bryum torquescens** (Br. et Schimp. Bryol. Europ. t. 358); foliis caulinis et ramulinis remotis elongato-lanceolatis complicato-carinatis margine reflexis subflexuosis, comalibus confertis ex ovato oblongo-lanceolatis concavis omnibus integris (limbo perangusto nervo in cuspidem lævem excedente) siccitate arcte contortis, capsula elongato-obconica subincurva rufo-brunnea, operculo lato mamillato purpureo nitido.

HAB. Western Mountains. (*Gunn,* 1588, 1701.) Cheshunt, *Archer.* Mount Wellington, *Mossman.* (Specimens few and imperfect.)

DISTRIB. New Zealand, Australia, Europe, South Africa.

b. *Florescentia dioica.*

6. **Bryum rubiginosum** (Hook. fil. et Wils.); caule elongato rigidulo, foliis laxis erecto-patentibus apice recurvis siccitate crispis subtortis ellipticis acutiusculis decurrentibus pellucide areolatis evanidinerviis margine inferne reflexis. (TAB. CLXXIII. Fig. 9.)

HAB. In wet places? (*Gunn,* 1667.) (Barren specimens only.)

Stem 1–2 inches long or more, bright-red. *Leaves* distant, yellowish-green, membranous. — Resembling *B. Duvalii* (Bryol. Europ.), but differing in the form of the leaf.—PLATE CLXXIII. Fig. 9; 1, portion of stem and leaf; 2, leaf:—*both magnified.*

7. **Bryum blandum** (Hook. fil. et Wils. Fl. Antarct. p. 134. t. 60. f. 1); foliis erecto-patentibus imbricatis ovali-oblongis obtusis concavis integerrimis laxe reticulatis tenuinerviis, capsula clavato-pyriformi cernua.

Var. *β. luridum.*

HAB. (Scanty and imperfect specimen.) (*Gunn.*)

DISTRIB. New Zealand, Antarctic Islands.

8. **Bryum lævigatum** (Hook. fil. et Wils. Fl. Antarct. p. 109. t. 154. f. 3); caule longiusculo inferne radiculis atro-purpureis tomentoso, foliis erecto-patentibus imbricatis ovatis obtusiusculis concavis integerrimis subcoriaceis subsolidinerviis siccitate erectis subappressis, capsula ovato-oblonga pendula, operculo conico-obtuso.

HAB. On wet rocks? (*Lawrence.*) (*Gunn,* 1588.) Cheshunt, *Archer.*

DISTRIB. Antarctic Islands, Fuegia.

9. **Bryum argenteum** (Linn. Sp. Pl. 1586); foliis imbricatis late ovalibus apiculatis concavis laxe areolatis integerrimis seminerviis albido-sericeis, capsula pendula ex ovali oblonga.—*Bryol. Europ. t.* 384.

Var. *niveum;* innovationibus obtusis, foliis arcte imbricatis niveis brevissime apiculatis submuticis, perichætialibus longioribus acuminatis.

HAB. Surrey Hills. (*Gunn,* 1615.)

DISTRIB. All parts of the world.

10. **Bryum clavatum** (Hook. fil. et Wils. Fl. N. Zeal. p. 84. t. 85. f. 3); foliis erecto-patentibus incurvis elliptico-lanceolatis subcoriaceis concavis nervo crasso excurrente cuspidatis, seta breviuscula, capsula clavato-oblonga arcuata majuscula subpendula, operculo subconico.

HAB. On the ground. (*Gunn.*)

DISTRIB. New Zealand.

11. **Bryum capillare** (Hedw. Sp. Musc. p. 182); foliis patentibus siccitate contortis ovato-oblongis vel obovatis concavis in apiculum longiusculum subpiliformem productis nervo sub apice evanido vel subexcurrente margine reflexis, capsula cernua vel pendula clavato-pyriformi subarcuata sicca sub ore vix angustata, operculo mamillato.—*Br. et Schimp. Bryol. Eur. t.* 368.

HAB. On rocks. (*Oldfield.*) (Specimens few and imperfect.)

DISTRIB. All parts of the world.

12. **Bryum obconicum** (Hornsch. in Bryol. Eur. t. 367); foliis oblongo-ovatis acuminatis nervo excurrente cuspidatis submarginatis apice serrulatis siccitate vix tortilibus margine reflexis subcarinatis, capsula subpendula clavata longicolla, operculo convexo mamillato.

HAB. Circular Head. (*Gunn,* 1701.) (Specimen small and imperfect.)

DISTRIB. New Zealand, Europe.

13. **Bryum pachytheca** (C. Mueller, Syn. Musc. i. 307); dioicum, caule humili, foliis lato-ovali-acuminatis concavis nervo crasso excurrente cuspidatis margine subplanis, capsula in pedicello breviusculo subito pendula ventricoso-ovali basi rotundata torosa rugulosa atro-purpurea, operculo breviusculo subconico. —B. balanoides, *Tayl. MSS.* (*Gunn,* 23, 1621 *b.*) (*Oldfield,* 56.)

Var. *β*; foliis angustioribus, nervo crassiore. (*Gunn,* 25.)

Var. *γ. inflatum;* foliis subrotundis valde concavis apice incurvis. (*Oldfield,* 56.)

HAB. Dry earth: Macquarrie Plains, *J. D. H.* Hospital Bay Hill, South Huon. Grass-tree Hill, with var. *γ*. Cultivated soil: Mount Richmond, *Gunn, Oldfield, etc.*

DISTRIB. Australia, New Zealand.

Very like *B. atropurpureum,* Wahl., in general aspect and size.—*Leaves* not recurved in the margin. *Nerve* stronger, more excurrent, red. *Capsule* more like that of *B. coronatum,* Schwægr.

14. **Bryum cæspiticium** (Linn. Sp. Pl. 1586); foliis caulinis remotis parvulis lanceolatis, comalibus majoribus in gemmam subimbricatam confertis rarius patentibus siccitate erectis subappressis ovato- et oblongo-lanceolatis acuminatis excurrentinerviis margine reflexis, capsula inclinata et pendula elongato-pyriformi fusca.—*Bryol. Eur. t.* 384.

Var. *crinitum;* foliis subpiliferis, seta longiori, capsula oblonga.

HAB. Dry ground: Hobarton. (*Gunn,* 24.) (*J. D. H.*) Port Sorrell, *Archer.* (Specimens few and immature.)

DISTRIB. Europe, Africa, America, Antarctic Islands, Fuegia.

15. **Bryum crassum** (Hook. fil. et Wils. Fl. N. Zeal. p. 86. t. 86. f. 1); caule longiusculo rigidulo ramoso tomentoso, ramis apice tumidis inferne foliis minutis vestitis, foliis erectis arcte imbricatis siccitate

appressis substriatis concavis ovato-oblongis coriaceis acutis solidinerviis margine reflexis apice subintegris, capsula pendula oblongo-pyriformi, operculo conico-apiculato.

Hab. Woods on Mount Wellington. Moist rocks: New Country, and Risden, *J. D. H.* Cheshunt, *Archer.*

Distrib. New Zealand.

16. **Bryum Billardieri** (Schwægr. Suppl. t. 76); foliis superioribus in rosulam congestis patentibus apice recurvis siccitate crispato-undulatis erectis obovato-oblongis acutiusculis immarginatis apice serratis nervo subexcurrente apiculatis margine inferne reflexis, seta crassiuscula apice in collo arcuato, capsulæ subito desinente, capsula nutante clavato-pyriformi arcuata, operculo subconico.

Hab. Moist places, in woods, *J. D. H.* Yorktown. (*Gunn,* 1585.) Cheshunt, *Archer.* Wellington Falls, *Mossman.*

Distrib. New Belgium, New Zealand, Australia, Falkland Islands, South Africa, South America.

17. **Bryum rufescens** (Hook. fil. et Wils.); *Bryo Billardieri* valde affine, caule graciliori, foliis spathulatis mollioribus basi pellucide areolatis rubellis margine vix recurvis, nervo rubello, capsula clavata arcuata subpendula ore purpurascente. (*Gunn,* 1691.) (Tab. CLXXIV. Fig. 1.)

Var. *β. mamillatum;* foliis patentibus laxioribus, nervo longius excurrente, operculo hemisphærico mamillato, capsula subæquali. (*Lyall,* 101.) (*Gunn,* 1585 *c.*)

Var. *γ. brevifolium;* foliis brevioribus concavis siccitate minus crispatis, capsula breviori. (*Gunn,* 1585 *b.*) (*Oldfield,* 334.)

Hab. Hobarton, and near Risden, *J. D. H.* Var. *γ.* By the seaside: Port Esperance. Penquite, *Gunn.*

Closely allied to the preceding species.—Plate CLXXIV. Fig. 1; 1, fruiting plant; 2, leaf; 3, capsule:—*all magnified.*

18. **Bryum truncorum** (Bridel, Mant. Musc. 119); caule elongato, foliis terminalibus in rosulam congestis patentibus apice recurvis siccitate tortuosis erectis obovato-acuminatis submarginatis apice argute serratis margine inferne reflexis, nervo subexcurrente, seta elongata apice in collo arcuato capsulæ desinente, capsula elongato-cylindrica arcuato-nutante, operculo conico-apiculato brevi.—B. Polla-truncorum, *Bridel, Br. Univ.* i. 699. B. leptothecium, *Taylor, MSS.*

Hab. Damp ground: Penquite. Rivulet by Lightwood Bottom, South Huon. (*Gunn,* 26 *a,* 1585.) (*Oldfield,* 55, 119.) Cheshunt, *Archer.* On sandy ground, *Mossman.*

Distrib. Isle de Bourbon.

Gen. XXXVI. AULACOMNION, *Schwægr.*

Peristomium Mnii. *Capsula* ovalis vel oblonga, subcylindracea, cernua, brevicolla, striata, siccitate sulcata. *Operculum* convexum, brevirostre.—Florescentia *dioica,* fl. masc. *discoideus.*

1. **Aulacomnion palustre** (Schwægr. Suppl. t. 216); caule radiculis ferrugineis tomentoso, foliis flexuoso-patentibus siccitate torquatis lineali-lanceolatis margine reflexis apice eroso-denticulatis, capsula curvula.

Var.; caule gracili, foliis minoribus acutis subintegris densius subopace areolatis siccitate valde crispatis.—*An species distincta?*

Hab. Formosa. (Barren specimens only, with pseudopodia.) (*Gunn.*)

Distrib. Europe, North America, Siberia.

Tribe XIII. BARTRAMIACEÆ.

Gen. XXXVII. BARTRAMIA, *Hedw.*

Peristomium duplex, simplex, vel nullum; *externum*, dentes 16, lanceolati, læves, trabeculati, linea media exarati, sicci incurvi, rufi; *internum*, membrana sedecies plicata, in dentes 16 lanceolatos carinatos latos dein in lacinias duas divergentes articulatas fissas producta, ciliis interjectis vel nullis. *Capsula* plerumque sphærica, microstoma, exannulata, siccitate sulcata, inclinata, erecta, vel cernua. *Operculum* plano-conicum, breve. *Calyptra* parva, dimidiata.—Folia *angusta, rigida, serrata, costata, quadrate areolata, papillosa.*

§ 1. BARTRAMIDULA.—*Capsula gymnostoma, estriata, in pedicello arcuato horizontalis vel pendula. Florescentia monoica. Plantæ parvulæ, tenellæ, sub apice fertili verticillato-ramulosæ.*

1. **Bartramia pusilla** (*Glyphocarpa*, Hook. fil. et Wils. Lond. Journ. Bot. 1844, p. 545); caule brevissimo gracillimo subramoso, foliis erecto-patentibus minutis ovatis acutiusculis laxe reticulatis subintegris margine planis evanidinerviis, perichætialibus brevibus erectis, seta apice arcuata brevi, capsula pendula globosa, operculo subconico planiusculo. (TAB. CLXXIV. Fig. 2.)

HAB. On rocks: near Hobarton, *Lyall.*

Scarcely 2 lines in height, the very short stem growing from a creeping stolon. *Branches* few, subfasciculate, curved, slender. *Leaves* very small, pellucid, with a very faint nerve. *Capsule* reddish-brown, lined at the mouth with a faint annular membrane adherent to the apex of the columella, which closes the orifice. *Spores* yellow, rather large. *Seta* pale. *Inflorescence* synoicous and monoicous.—A smaller species than *Bartramidula Wilsoni*, Bryol. Europ., with *leaves* of both stem and perichætium one-third as small, without serratures. *Capsule* globose. —PLATE CLXXIV. Fig. 2; 1 and 2, plants in fruit; 3, portion of stem and leaves:—*all magnified.*

§ 2. PHILONOTIS.—*Capsula peristomio instructa, striata, pachyderma. Caulis sub apice florifero fasciculato-ramosus. Florescentia monoica et dioica; fl. masc. discoideus.*

2. **Bartramia remotifolia** (Hook. fil. et Wils.); dioica, caule humili gracili fasciculatim ramoso, ramis gracilibus brevibus subrecurvis, foliis glaucescentibus distantibus patentibus siccitate laxe crispatis lanceolato-acuminatis serrulatis margine planis nervo pellucido angusto excurrente, perichætialibus longioribus erectis, seta elongata crassiuscula, capsula suberecta.—Philonotis appressa, *Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXIV. Fig. 3.)

HAB. Gullies Road, Brown's River, *Oldfield.* (Specimen very scanty and immature.) On rocks: Elliott Rivulet. Rivulet near Cumming's Head, Western Mountains, *Archer.*

Stem $\frac{1}{4}$ inch, very slender, not thicker than the fruit-stalk. *Foliage* pale, glaucous, with small, dense, opaque areolæ. *Seta* nearly 1 inch long, red.—Allied to *B. glauca*, Arnott; habit more slender; leaves crisped when dry.—PLATE CLXXIV. Fig. 3; 1, portion of stem and leaves; 2, leaf:—*both magnified.*

This appears to me to be the fertile state of *B. appressa*, Fl. N. Zeal. ii. 89.—*Mitten, in lit.*

3. **Bartramia tenuis** (Taylor, in Phytol. 1844, p. 1095); dioica, caule gracili apice fasciculatim ramoso, ramis gracilibus flexuosis, foliis laxis patentibus secundis anguste lanceolatis serrulatis margine planis nervo longe excurrente dorso spinuloso acuminatis, perichætialibus setaceo-acuminatis erectis, seta longiuscula gracili, capsula inclinata, peristomii interni processibus elongatis apice connexis, flore masculo capituliformi, foliis perigonialibus apice patenti-incurvis longe acuminatis serrulatis. (TAB. CLXXIV. Fig. 4.)

HAB. Deep Gully, Mount Wellington, near springs, *Oldfield.*

DISTRIB. Norfolk Island, New Zealand (*fide Taylor*).

Closely allied to *B. mollis* (Dz. and Molk. Ann. Sc. Nat. 1844, ii. 300).—*Leaves* less crowded, more patent, of laxer texture; areolæ larger, rectangular, flexuose at the apex; margin not reflexed; serratures larger and more distant, less evidently in a double series.—The specimens are too few to admit of more than one capsule being examined, but if the character of the inner peristome prove constant, it will be a good mark of the species.—PLATE CLXXIV. Fig. 4; 1, portion of stem and leaves; 2, leaf; 3, capsule:—*all magnified.*

This I take to be the *B. uncinata*, Schwægr., of Fl. N. Zeal. ii. 89.—*Mitten, in lit.*

4. **Bartramia affinis** (Hook. Musc. Exot. t. 176); dioica, caule tomentoso parce fasciculato-ramoso, foliis erecto-patentibus strictis ovato-lanceolatis acuminatis subintegris basi subplicatis margine anguste recurvis nervo crassiusculo longe excurrente, perichætialibus minoribus erectis, seta breviuscula, capsula subpendula oblonga subpyriformi sulcata, operculo conico.

HAB. Moist ground, frequent. Goat Hill, New Norfolk. Back River Gully. Kangaroo Bottom. Mount Wellington. (*J. D. H.*) (*Gunn*, 1627, 1683.) (*Oldfield*, 149, 153, 280.) On dead timber, in exposed places: Mount Wellington, *Mossman.*

DISTRIB. New Zealand, Australia.

§ 3. BREUTELIA.—*Folia vaginantia, plicata, squarrosa. Caulis fasciculato-ramosus. Inflorescentia dioica; fl. masc. discoideus.*

5. **Bartramia pendula** (Hook. Musc. Exot. t. 21); dioica, caule fasciculatim ramoso tomentoso, foliis patentibus ovato-lanceolatis longe acuminatis serrulatis striatis excurrentinerviis, seta elongata, capsula pendula oblonga sulcata.—*Schwægr. Suppl. t.* 239.

HAB. Mount Wellington, elev. 2000 feet. Mount Nelson. Brown's River. (*J. D. H.*) (*Oldfield*, 326.)

DISTRIB. New Zealand, Hermite Island, Campbell's Island.

This I take to be the true *B. Sieberi.*—*Mitten, in lit.*

6. **Bartramia crassa** (Hook. fil. et Wils.); dioica, caule tomentoso robusto longiusculo parce vageque ramoso, foliis confertis patentibus plerumque secundis e basi ovata amplexicaule lanceolato-acuminatis plicatis serrulatis nervo angusto subexcurrente, seta longa, capsula inclinata oblonga.—B. gigantea, *Schwægr. Suppl. t.* 161. (*Conf.* B. Sieberi, *Hornsch.; C. Mueller, Syn. Musc.* i. 491.) (TAB. CLXXIV. Fig. 5.)

HAB. Near springs: top of Western Mountains. Mount Wellington. Creek above the Wellington Falls. (*Gunn.*) (*Oldfield*, 101, 104, 106, 111.)

Stem 1 inch, rigid. *Leaves* yellowish, glossy, not crisped when dry. *Seta* 1½ inch. *Capsule* large.—Allied to *B. pendula;* leaves more sheathing at the base, less acuminate; serratures more evident; areolæ narrower. The true *B. gigantea* (Schwægr. Suppl. t. 63) is a larger Moss, with more widely spreading leaves.—PLATE CLXXIV. Fig. 5; 1 and 2, leaves; 3, capsule:—*all magnified.*

7. **Bartramia Sieberi** (Hornsch. in Muscis Sieberianis, n. 13!); "dioica, caule procumbente suberectove ramulis brevibus fasciculatis ramoso innovante iterumque ramoso inferne dense radiculoso, foliis haud nitidis e basi brevi erectiuscula ad insertionem contracta patentibus lanceolatis estriatis nervo angusto in acuminem setaceo-pungentem excurrente marginibus serrulatis inferne recurvis cellulis omnibus elongatis angustis papillosis, perichætialibus conformibus, theca in pedunculo rubro unciali apice flexura angusto pendula ovalis plicata, operculo depresso conico, peristomio parvo, normale?, flore masculo foliis quadruplo latioribus late ovatis patulis nervo superne evanido."—*Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXIV. Fig. 6.)

Hab. Mount Wellington, *J. D. H.*, *Oldfield.*

Distrib. New Zealand, *Sieber.*

Stems in all the Tasmanian specimens scarcely exceeding an inch in height; colour of the foliage yellowish-green, without gloss; leaves narrow; cells in the upper portion elongated, everywhere distinctly papillose; alary cells few, indistinct. In all the allied species the cells of the upper portion of the leaf are shortened. *Mitten, l. c.* —Plate CLXXIV. Fig. 6; 1, leaf; 2, capsule:—*both magnified.*

8. **Bartramia divaricata** (Mitten, in Journ. Linn. Soc. ined.); "dioica, caule elongato inferne tomentoso subsimplici, foliis e basi brevi caulem amplectente, cellulis hyalinis pluribus ad angulos marginum congestis, divaricatis lanceolatis plicatis papillosis margine serrulatis nervo tenui excurrente mucronatis siccitate subflaccidis, perichætialibus ovatis integerrimis nervo angustissimo, theca in pedunculo elongato horizontali oblongo-ovali, collo pyriformi attenuato, operculo conico, peristomio normali."

Hab. Cheshunt, *Archer.*

Distrib. New Zealand.

Resembles the larger states of *B. pendula*, but differs in its divaricated leaves, which have, when dry, a subflaccid appearance, a differently formed base, and the stems almost simple. *Mitten, l. c.*

9. **Bartramia comosa** (Mitten, in Journ. Linn. Soc. ined.); "dioica, caule erecto inferne fusco tomentoso superne ramis pluribus comosis ramoso, foliis e basi breviter erecta superne dilatata utrinque ad margines seriebus pluribus cellularum hyalinarum majorum limbata inde patentibus divergentibusque sensim angustatis lanceolatis plicatis minute papillosis margine serrulatis nervo excurrente setiformi siccitate haud mutatis, perichætialibus minoribus ovato-lanceolatis, theca in pedunculo elongato sesquiunciali ovali inclinata plicata operculo conico peristomio normale." (Tab. CLXXIV. Fig. 7.)

Hab. Rocks: East Creek and Cumming's Head, Western Mountains, *Archer.* Wellington Falls, Mount Wellington, *Mossman.*

Distrib. New Zealand.

This fine species differs from all the states of *B. pendula* in the short, erect base of its leaves, which is widest at the point from which the superior portion is deflexed, and composed of cells which are everywhere far shorter. *Mitten, l.c.*—Plate CLXXIV. Fig. 7; 1, leaf; 2, apex of ditto; 3, capsule:—*all magnified.*

§ 4. Bartramia.—*Caulis dichotome fastigiato-ramosus. Fl. masc. gemmæformis.*

10. **Bartramia Halleriana** (Hedw. Musc. Frond. t. 40); monoica, caule elongato vage fastigiato-ramoso, foliis patentibus vel secundis siccitate laxe flexuosis e basi lata subvaginante lineari-subulatis serrulatis, capsula subglobosa brevipedicellata immersa, operculo conico.—*Bryol. Europ. t.* 320. B. Mossmaniana, *C. Mueller, Bot. Zeit.* 1851, *p.* 552; *conf. Mitten, in Journ. Linn. Soc. ined.*

Hab. Near springs, and on moist rocks; abundant. Mount Wellington. St. Patrick's River. (*J. D. H.*) (*Gunn*, 1589, 1697.) (*Oldfield*, 32, 267.) On rocks: Elliott Rivulet. Rivulet behind Cumming's Head, Western Mountains, and in a rivulet, north side of Western Mountains, at an altitude of about 2000 feet, *Archer.* Mount Wellington, *Mossman.*

Distrib. Europe, North and South America, New Zealand.

11. **Bartramia papillata** (Hook. fil. et Wils. Fl. N. Zeal. p. 89. t. 86. f. 4); dioica, caule subramoso, foliis confertis erecto-patentibus patulisve strictis e basi pallida obovata vaginante subulatis minutissime serrulatis dorso papillatis solidinerviis, seta longiuscula, capsula suberecta.—B. acerosa, *Hampe, Plantæ Muellerianæ in Linnæa; fid. Mitten.*

Hab. On rocks. (*Gunn*, 29.) Dry Hill, Back River. (*Oldfield*, 228.) East side of Ovens Creek, *Archer.*

Distrib. New Zealand.

Resembles *B. ithyphylla*, Brid., but differs in the inflorescence.

12. **Bartramia fragilis** (Mitten, in Journ. Linn. Soc. ined.); "dioica?, dense cæspitosa, caule erecto subsimplici, foliis densis fragillimis erecto-patentibus e basi appressa laxe vaginante oblonga superne paululum dilatata ibique tenuiter hyalino-marginata laxe areolata subito subulata longe lanceolatis cellulis obscuris densis nervo percurrente margine dorsoque serrulatis, perichætialibus lanceolatis inconspicuis, theca in pedunculo breviusculo rubro globosa plicata erecta, operculo brevi conico, peristomio externo normale interno processibus brevissimis rudimentariis." (Tab. CLXXIV. Fig. 8.)

Hab. On rocks: rivulet behind Cumming's Head, Western Mountains, *Archer*.

Distrib. New Zealand.

More densely and compactly cæspitose than *B. papillata*, the subulate portion of the leaf wider, less papillose, and not so obscure. The inflorescence appears to be dioicous. The leaves are so densely congested that the vaginant base is not erect, but only appressed to those above it, and the slightest touch suffices to detach them from the stem. *Mitten, l. c.*—Plate CLXXIV. Fig. 8; 1, leaf; 2, capsule; 3, teeth:—*all magnified.*

Gen. XXXVIII. CONOSTOMUM, *Swartz.*

Peristomium simplex; *dentes* 16, lanceolato-subulati, in conum persistentem conniventes, apice connexi. *Capsula* globosa, microstoma, sulcata, exannulata. *Operculum* conico-rostellatum. *Calyptra* brevissima, subulata, latere fissa.

1. **Conostomum australe** (Swartz, in Schrad. New Bot. Journ.); monoicum, caule erecto ramoso, ramis fasciculatis, foliis erectis densissime imbricatis lineari-lanceolatis acuminatis nervo lato excurrente cuspidatis supremis piliferis, capsula subrotundata inclinata, operculo oblique rostellato.—*Schwægr. Suppl. t.* 130; *Fl. Antarct. pp.* 182, 411; *Fl. N. Zeal. p.* 87; *Mitten, in Journ. Linn. Soc. ined.*

Hab. Rivulet behind Cumming's Head, Western Mountains, *Archer*.

Distrib. New Zealand, Fuegia.

2. **Conostomum pusillum** (Hook. fil. et Wils. Fl. Antarct. p. 88. t. 86. f. 2); monoicum, caule humili, foliis suberectis laxe imbricatis lanceolato-acuminatis laxe reticulatis nervo angusto excurrente subpiliferis margine reflexis duplici serie serratis, capsula inclinata demum cernua.—C. parvulum, *Hampe, Plantæ Muellerianæ in Linnæa.*

Hab. Sides of banks: Hill, Back River. On rocks. (*Oldfield*, 124.) The Falls, and rivulet behind Cumming's Head, Western Mountains, *Archer*.

Distrib. New Zealand.

Tribe XIV. Funariaceæ.

Gen. XXXIX. PHYSCOMITRIUM, *Brid.*

Peristomium nullum. *Capsula* erecta, pyriformis, symmetrica, exannulata. *Operculum* conicum. *Calyptra* vesiculari-cucullata.—Florescentia, habitus, *etc., omnino Funariæ.*

1. **Physcomitrium apophysatum** (Tayl. in Lond. Journ. Bot. 1846, p. 43); caule brevi, foliis erecto-patentibus ovatis acuminatis subserrulatis concavis evanidinerviis, seta brevi, capsula erecta clavato-pyriformi siccitate sub ore constricta.—*Hook. fil. et Wils. Fl. N. Zeal. p.* 91. *t.* 86. *f.* 6. Entosthodon, *Mitten, in Journ. Linn. Soc. ined.*

Hab. The Hummocks, *Archer*.

Distrib. New Zealand, Australia.

2. **Physcomitrium laxum** (Hook. fil. et Wils. Fl. Antarct. p. 399. t. 151. f. 5); "cæspites laxe cohærentes, altiusculi; caulis robustus, subelatus, laxifolius; folia caulina erecto-appressa, laxe conferta, e basi angustiore longiuscula spathulato-ovato-acuminata, integra, e cellulis magnis laxissimis lutescentibus reticulata, nervo ultra medium evanido; seta semiunciali; capsula obovata."—*Mitten, in Journ. Linn. Soc. ined., sub* Entosthodon.

Hab. On stones: rivulet near Cumming's Head, Western Mountains, *Archer*.

Distrib. Kerguelen's Land, Australia.

3. **Physcomitrium conicum** (Mitten, in Journ. Linn. Soc. ined.); "*P. pyriformi* simile foliisque conformibus serrulatis cellulis fere dimidio minoribus marginalibus intensiore coloratis, theca in pedunculo bilineari pyriformi, operculo depresso conico umbonato."

Hab. Leith's Creek, *Archer*.

Less than the usual states of *P. pyriforme*, but very similar to it in appearance.—*Mitten, l. c.*

XL. ENTOSTHODON, *Schwægr.*

Peristomium simplex; *dentes* 16, infra capsulæ orificium adnati, simplices vel gemelli, lanceolati, intus trabeculati, siccitate erecti. *Capsula* erecta, pyriformis, symmetrica. *Operculum* plano-convexum. *Calyptra* vesiculari-cucullata.—Florescentia, habitus, *etc.*, *Funariæ*.

1. **Entosthodon gracilis** (Hook. fil. et Wils. Fl. N. Zeal. p. 91. t. 86. f. 7); caule brevissimo, foliis erectis conniventibus subellipticis acutis concavis subcarinatis integerrimis evanidinerviis, seta gracili elongata sinistrorsum tortili, capsula erecta ex apophysi angustiore plicata pyriformi exannulata, operculo planiusculo.

Hab. Gullies Road, Brown's River, growing with *Hypnum limatum*. Hillside, among grass: New Norfolk. (Specimens few and immature.) (*Oldfield*, 337.)

Distrib. New Zealand.

2. **Entosthodon productus** (Mitten, in Journ. Linn. Soc. ined.); "monoicus, parvulus, humilis, foliis inferne ovatis in acumen lanceolatum angustatis integerrimis nervo sub apice evanido, cellulis elongatis, theca in pedunculo bilineari parva ovali, operculo depresso-convexo umbonato, peristomio nullo?" (Tab. CLXXV. Fig. 1.)

Hab. On the earth: behind Cumming's Head, Western Mountains, *Archer*.

A small species, allied in the form of its leaves to *E. Mittenii*, Dz. and Molk. The fruit too young to exhibit the peristome, if indeed that organ is present. *Mitten, l. c.*—Plate CLXXV. Fig. 1; 1, leaf; 2, capsule:—*both magnified.*

Gen. XLI. FUNARIA, *Schreb.*

Peristomium duplex; *externum*, dentes 16, obliqui, lanceolato-subulati, crebre articulati, intus trabeculati; *internum*, basi dentibus adnatum, processus sedecim lanceolatos planos dentibus oppositos sistens. *Capsula* pyriformis, gibba, inclinata vel cernua, orificio obliquo. *Annulus* compositus vel nullus. *Operculum* subconicum, breve. *Calyptra* inferne inflata, superne subulata, demum latere fissa.—Florescentia *monoica*: fl. masc. *discoideus*; antheridia *paraphysibus clavatis immixta*. Folia *laxe reticulata, tenera.*

1. **Funaria hygrometrica** (Hedw. Sp. Musc. p. 172); foliis superioribus conniventibus late ovali-lanceolatis concavis integerrimis nervo continuo, perigonialibus apice serratis, capsula incurvo-pyriformi sicca plicata ore corrugata, annulo composito, operculo convexo, seta plus minus arcuata.—*Br. et Schimp. Bryol. Europ. t.* 305.

Hab. Grass-tree Hill, Brown's River, Back River, New Norfolk. (*J. D. H.*) (*Gunn.*) (*Oldfield,* 127, 133, 137–8.) (*Lyall.*) On stones of fossiliferous limestone, and walls, Cheshunt, *Archer.*

Distrib. All parts of the world.

2. **Funaria crispula** (Hook. fil. et Wils.); foliis patentibus siccitate laxe crispatis obovatis apiculatis concaviusculis subserrulatis evanidinerviis, seta breviuscula sinistrorsum torta, capsula globoso-pyriformi curvata brevicolla, operculo planiusculo.—F. radians, *Mitten, in Journ. Linn. Soc. ined.* (Tab. CLXXV. Fig. 2.)

Hab. On rocks: on the Kermandie Rivulet, South Huon. (*Oldfield,* 57.) (Specimens few and imperfect.) Port Sorrell, bank near Cheshunt, and on rocks, north side of Cataract, Launceston, *Archer.*

Allied to *F. glabra,* Taylor, but differs in the form of the capsule and in the crisped foliage.—*Peristome* double, inner yellow. *Annulus* none? *Spores* rather large, granular, reddish.—Plate CLXXV. Fig. 2; 1, plant; 2, leaf; 3, apex of ditto; 4, peristome:—*all magnified.*

Tribe XV. Splachneæ.

Gen XLII. SPLACHNUM, *Linn.*

Peristomium simplex; *dentes* 8 vel 16, lineari-lanceolati, plani, haud trabeculati, plus minus per paria approximati, partimque connati, rarius æquidistantes, hygroscopici, siccitate nunc reflexi nunc erecto-inflexi, infra capsulæ orificium adnati. *Capsula* erecta, ovalis, oblonga vel conica, exannulata, apophysi (capsula ipsa sæpe majore) suffulta. *Operculum* conico-convexum. *Calyptra* conico-mitræformis, lacera, vel cucullata, basi integra vel inflexo-appendiculata, nuda vel pilosa. *Sporæ* minutæ, radiatim (lineolis sporarum 6–8) dispositæ.—Florescentia *monoica vel dioica: fl. masc. discoideo-capituliformes;* antheridia *paraphysibus clavatis immixta.* Folia *mollia, laxe areolata, evanidinervia.*

§ 1. Eremodon (Bridel).—*Dentes* 8, *æquidistantes, siccitate erecto-incurvi.*

1. **Splachnum (Dissodon) callophyllum** (C. Mueller, Bot. Zeit. 1851, p. 546); "cæspites laxi, inferne tomento purpureo intertexti, lati; caulis tenerrimus, ascendens, subelatus, late foliosus, amœne pallide virens, flaccidus; folia caulina laxe imbricata, tenerrima, flaccida, e basi angusta late spathulato-ovalia, cuspidata, ubique e cellulis maximis amœne chlorophyllosis tenerrimis mollissimis rhombeis basi elongate quadratis chlorophyllosis reticulata, margine e medio usque ad apicem summum argute serrata, nervo subtenui virente excurrente percursa; perichætialia longius cuspidata, omnia cuspide flaccidissimo molli; theca in pedunculo longiusculo crassiusculo rubente geniculato ascendente, sensim in collum thecæ longiusculum angustum incrassato erecta, anguste cylindrica, sed medio amplior, microstoma, olivacea, dein fuscescens, sæpius madore ad partem dimidiam superiorem obliqua, operculo cupulato obtuso obliquo brevissimo; peristomii dentes erecti, madore conniventes, breves, infra orificium oriundi, flavescentes, opaci."—*C. Mueller, l. c.* (*Mitten, in lit.*) Eremodon robustus, *Hook. fil. et Wils. Fl. N. Zeal. p.* 93. *t.* 87. *f.* 2.

Hab. Fern-tree Valley, Mount Wellington, *Mossman.*

Distrib. New Zealand.

2. **Splachnum Octoblepharum** (Hook. Musc. Exot. t. 167); foliis obovatis longe acuminatis sub-

piliferis integerrimis, capsula clavata, peristomii dentibus octo-geminatis, calyptra nuda.—*Schwægr. Suppl. t.* 129. Dissodon plagiopus, *C. Mueller, Bot. Zeit.* 1851, *p.* 547, *fide Mitten, in lit.*

Var. *γ. majus;* foliis majoribus latioribus.—*Fl. Antarct. p.* 12. *t.* 57. *f.* iv. 6.

Hab. Moist places, not uncommon on cow-dung. (*Gunn*, 7, 1624.) (*J. D. H.*) Near South Port. Coal River Tier, near Richmond, and Brown's River Gully. (*Oldfield*, 67, 331, 335.) Sand Hill. On logs: Smith's Creek. (*Archer.*) Var. *γ.* Johnny's Creek. (*Oldfield*, 122.) Found by Mr. Valentine growing on the bones and decayed clothing of a bush-ranger, at the base of the Western Mountains, Feb. 1845.

Distrib. New Zealand, Australia, Antarctic Islands.

3. **Splachnum Gunnii** (Hook. et Wils. in Lond. Bot. Journ. vii. p. 26. t. 1 B.); caule rigidiusculo crasso breviusculo radiculis ferrugineis tomentoso, foliis squarrosis obovatis vel spathulatis acutiusculis concaviusculis apice grossiuscule dentatis evanidinerviis purpurascentibus, seta brevi crassa, capsula conica, apophysi maxime dilatata subplicata depressa, peristomii dentibus octo siccitate erectiusculis incurvis, calyptra minuta conica basi inflexa nuda.

Hab. On dead Fern-trees: Acheron River. (*Gunn*, 1625.)

A very remarkable species.—*Capsule* with a large oblate apophysis, pale (as if pulverulent), of firm texture, scarcely altered when dry. *Seta* red. *Leaves* tinged with red, pale, not crisped when dry.—Whole plant about ⅓ inch in length. Dioicous?

Tribe XVI. Buxbaumiæ.

Gen. XLIII. BUXBAUMIA, *Haller.*

Calyptra cylindrico-campanulata, parva, operculum tegens, fugax, coriacea, interdum latere fissa. *Peristomium* duplex: *exterius* nunc membrana solida irregulariter inciso-emarginata e strato cellularum duplici conformata opaca et obscure rufescens, nunc dentes inæquales moniliformi-articulati vallorum instar angust solidi; *interius* membrana albida tenerrima in conum tubulosum producta valde acute-angulato-plicata, siccitate leviter tortuosa angulosa. *Columella* in operculum exserta et cum eodem decidua.—*C. Mueller, Syn. Musc.* i. *p.* 151.

1. **Buxbaumia Tasmanica** (Mitten, in Journ. Linn. Soc. ined.); "*B. indusiata* simillima, foliis parvis ciliatis, pedunculo nitido subscabro, theca suberecta ovata superficie superiore planiuscula immarginata, inferiore convexa, operculo conico."

Hab. Cheshunt, *Archer.*

Closely resembling *B. indusiata*, but differing in its nearly smooth, shining seta.—*Peristome* apparently composed of smooth bladdery cells, scarcely free from the internal membrane.—All the capsules yet seen, although fully formed, are too immature to show the perfectly developed peristome, or if the external capsular wall rolls off as in *B. indusiata.*—*Mitten, l. c.*

Tribe XVII. Polytrichaceæ.

Gen. XLIV. POLYTRICHUM, *Dill., Linn.*

Peristomium simplex; *dentes* 32–64, raro 16, breves, ligulati, inflexi, duriusculi, e filis inarticulatis duplici lamina dispositis contexti, haud hygroscopici, epiphragma inter apices dentium sustentum. *Calyptra* parva, cuculliformis, plerumque indumento villoso vestita, interdum nuda.

Subgenus 1. ATRICHUM, P. Beauv.—*Calyptra anguste cucullata, elongata, nuda, apice tantum spinulosa. Capsula cylindrica. Operculum tenuirostre. Folia lanceolata-ligulata, nervo angusto, parce lamellosa, subflaccida.*

1. **Polytrichum angustatum** (Hook. Musc. Exot. t. 50); dioicum, gracile, foliis elongato-lanceolatis erecto-patentibus anguste limbatis superne spinoso-serratis siccitate crispis, capsula suberecta tenui-cylindracea, operculo tenuirostri, calyptra nuda.—Atrichum angustatum, *Bryol. Europ. t.* 411. A. ligulatum, *Mitten, in Kew Miscel.* 1857, *p.* 262; *idem in Journ. Linn. Soc. ined.*

Var. *polysetum;* setis aggregatis.

HAB. South Port Narrows, and Creek Town, etc. (*Gunn,* 25.) (*Oldfield,* 68.)

DISTRIB. Europe, North America, East India.

Subgenus 2. PSILOPILUM, Bridel.—*Peristomii dentes* 16–32, *brevissimi. Capsula ovato-ventricosa. Calyptra apice pilosiuscula, inferne nuda.*

2. **Polytrichum australe** (Hook. fil. et Wils. Fl. N. Zeal. p. 95. t. 87. f. 6); dioicum, caule brevi, foliis confertis erecto-patentibus ovato-subulatis rigidulis canaliculatis integerrimis dense lamellatis siccitate erectis incurvis, seta breviuscula, capsula inclinata ovata ventricosa microstoma, operculo rostellato, calyptra brevi apice scabra.

HAB. Hobarton, *J. D. H.* On stones and on the earth: rivulet behind Cumming's Head, Western Mountains, *Archer.*

DISTRIB. New Zealand, Hermite Island, Cape Horn.

3. **Polytrichum (Psilopilum) crispulum** (Hook. fil. et Wils.); dioicum, foliis laxe patentibus subflaccidis siccitate crispulis incurvis lanceolato-oblongis acutiusculis denticulatis anguste lamellatis, seta elongata, capsula inclinata ovata microstoma, operculo rostrato, peristomii dentibus 32 minutis angustis.—*Fl. N. Zeal. p.* 95. *t.* 87. *f.* 3.

HAB. Western Mountains, *Archer.*

DISTRIB. New Zealand.

Subgenus 3. CYPHOMA, Hook. fil. et Wils.—*Capsula superne plana, inferne gibba. Calyptra subnuda. Peristomii dentes* 32–64. *Folia argute serrata, basi vaginantia, rigida.*

4. **Polytrichum Magellanicum** (Hedw. Sp. Musc. t. 20); caule ramoso, foliis patentibus recurvis rigidis e basi ovata vaginante subulatis serratis, capsula inclinata vel horizontali oblonga semitereti, operculo conico-rostrato, calyptra pilosiuscula.—*Fl. Antarct. pp.* 132, 411. *t.* 59. *f.* 3; *Fl. N. Zeal. p.* 95. Polytrichadelphus Magellanicus, *Mitten, in Journ. Linn. Soc. ined.* Catharinea Polytrichadelphus innovans, *C. Mueller; conf. Mitten, l. c.*

HAB. Gully above the Wellington Falls, Mount Wellington. (*Oldfield,* 248, 295.) Cheshunt, *Archer.* Mount Wellington, with *P. juniperinum, Mossman.*

DISTRIB. New Zealand, Antarctic Islands, South America.

Subgenus 4. POGONATUM, P. Beauv., Brid., Br. et Sch.—*Calyptra villosa. Capsula teres.*

5. **Polytrichum (Pogonatum) alpinum** (Linn.); foliis e basi vaginante longe et anguste lineali-lanceolatis concavis margine argute serratis apice dorso spinulosis lamellis margine sensim incrassatis, capsula erecta vel obliqua ovata et ovali-oblonga lævi collo perbrevi tumidulo instructa, operculo longius rostello, calyptra villo fuscescente capsulam ex parte vel omnino obtegente, peristomii dentibus breviusculis, subirregularibus.—*Bryol. Europ. p.* 9. (*Mitten, in lit.*)

HAB. The Falls, and rivulet behind Cumming's Head, Western Mountains, *Archer.*

DISTRIB. Australia, Europe, North America.

Subgenus 5. POLYTRICHUM, Bridel.—*Capsula angulata, apophysi discoidea instructa. Operculum brevius rostratum. Calyptra villosa. Peristomii dentes* 64. *Columella alata.*

6. **Polytrichum commune** (Linn. Sp. Pl. ii. 1573); caule elongato, foliis e basi vaginante patenti-recurvis lineari-lanceolatis longis serratis lamellis margine subbifidis obtectis, perichætialibus membranaceis erectis vaginantibus, capsula tetragona, operculo brevirostri.—*Bryol. Europ. t.* 425.

Var. *β*; caule gracili breviore, foliis brevioribus erecto-patentibus confertis siccitate erectis.

HAB. Bogs on hillside, Brown's River. (*Gunn*, 1591.) (*Oldfield*, 327.) Cheshunt, *Archer*. Var. *β*. Bogs near the Huon. (*Oldfield*, 297.)

DISTRIB. Common in all parts of the world.

7. **Polytrichum juniperinum** (Hedw. Sp. Musc. t. 18); foliis patentibus subrecurvis e basi vaginante lineari-lanceolatis margine membranaceo inflexis integerrimis brevi-aristatis, capsula quadrangulari siccitate horizontali, operculo rostellato.—*Bryol. Europ. t.* 423.

HAB. On the ground: summit of Mount Wellington. Falls, New Norfolk. (*Gunn*, 5.) (*Lyall*, 103.) (*J. D. H.*) Elliott Rivulet, *Archer;* gathered also by *Mossman*.

DISTRIB. Europe, Asia, North America.

Gen. LX. DAWSONIA, *Brown.*

Peristomium penicillatum, ciliis numerosissimis, capillaribus, erectis, æqualibus, inarticulatis, capsulæ ore et columellæ apice impositis. *Calyptra* subulata, latere fissa, indumento e villis intertextis vestita. *Capsula* hinc plana, inde convexa. *Operculum* subulatum.—Habitus, folia, florescentia, etc., *omnino* Polytrichi.

1. **Dawsonia superba** (Greville, in Ann. Nat. Hist. 1847, p. 226. t. 12); caule elongato, foliis e basi ovato-subrotunda amplexicauli linearibus longissimis rigidis spinoso-serratis erecto-patentibus, seta brevi crassa, capsula foliis exserta, calyptra parva pallidiore pilis brevibus vestita.—"D. longifolia, *R. Br.*" *Gunn, in sched.*

HAB. Emu Bay. (*Gunn*, 1590.) Cheshunt, *Archer*.

DISTRIB. New Zealand.

Section 2. PLEUROCARPI.

Tribe XVIII. LEUCODONTEÆ.

Gen. XLVI. LEUCODON, *Bridel.*

Peristomium simplex; *dentes* 16, basi connati, perforati, bipartiti vel bifidi. *Calyptra* cuculliformis. *Capsula* erecta, æqualis, exannulata. *Florescentia* dioica.—Folia *dense imbricata, plerumque enervia, plicato-striata vel lævia, anguste areolata.*

1. **Leucodon Lagurus** (Hook. Musc. Exot. t. 126); caule ramoso tomentoso, foliis imbricatis oblongo-ovatis concavis piliformi-acuminatis estriatis subenerviis, capsula erecta subcylindrica, operculo oblique rostrato.—*Schwægr. Suppl. t.* 133. Stereodon Lagurus, *Mitten, in Journ. Linn. Soc. ined.*

HAB. On dry rocks, at an altitude of 1000 feet, near the top of Mount Wellington, on the south side. (*J. D. H.*) (*Oldfield*, 116.) Cheshunt, *Archer*.

DISTRIB. Campbell's Island, Hermite Island, Straits of Magellan.

Leaves very glossy, bright green, nerveless or two-nerved at the base, variable, sometimes single-nerved half-

way. *Seta* near 1 inch long. *Peristome* white. *Operculum* above half as long as the capsule. *Calyptra* large, longer than the capsule, cucullate, pale yellowish-brown. *Male surculi* extremely slender, very different in aspect from the fertile stems with which they are intermixed, bearing piliferous leaves variable in shape, often lanceolate and very small. *Male flower* with a few roundish antheridia, and no paraphyses.

Gen. XLVII. CLADOMNION, *Hook. fil. et Wils.*

Peristomium duplex; *externum*, dentes 16, lanceolati; *internum*, membrana in processus 16 carinatos profunde divisa. *Capsula* erecta, æqualis, brevipedicellata. *Calyptra* cucullata, magna. *Operculum* rostratum.—Caulis *repens;* surculi *erecti, elongati, subsimplices.* Folia *plicata.* Habitus *Leucodontis.*

§ 1. *Capsula sulcata. Folia enervia.*

1. **Cladomnion sciuroides** (*Leskea*, Hook. Musc. Exot. t. 175); dioicum, surculis vage ramosis, ramis subcompressis incurviusculis, foliis erecto-patentibus subsecundis ovatis acuminatis plicato-striatis enerviis apice serratis, capsula erecta oblonga sulcata brevipedicellata, operculo conico-subulato.—Stereodon (Achyrophyllum) sciuroides, *Mitten, in Journ. Linn. Soc. ined.*

HAB. On twigs and trunks of trees, in dense woods: Huon River. (*J. D. H.*) Black River Gully, Johnny's Creek. (*Oldfield*, 77.) On trees, in creeks, *Archer.*

DISTRIB. New Zealand.

§ 2. *Capsula lævis. Folia nervosa.*

2. **Cladomnion setosum** (*Anictangium*, Hedw. Sp. Musc. t. 5); dioicum, surculis elongatis subsimplicibus, foliis confertis subsecundis e basi ovata subulato-setaceis solidinerviis serratis, capsula oblonga erecta brevipedicellata, operculo rostrato.—Neckera setosa, *Hook. Musc. Exot. t.* 8.

HAB. Tasmania, *Gunn.*

DISTRIB. New Zealand, South America.

Tribe XIX. LESKEACEÆ.

Gen. XLVIII. LESKEA, *Hedwig.*

Peristomium duplex; *externum*, dentes 16, anguste lanceolati, tenues, intus trabeculati; *internum*, processus totidem e membrana basilari angusta procedentes, plus minus perfecti. *Capsula* erecta, oblonga, alte pedicellata. *Calyptra* cucullata.—Caulis *primarius repens;* innovatio *e ramis procumbentibus nec e stolonibus.* Folia *opaca, chlorophyllosa, nunquam scariosa, plerumque papillosa, costata;* areolis *minutis hexagono-quadratis, inferne rectangulis.*

1. **Leskea imbricata** (Hook. fil. et Wils.); monoica, caule repente, surculis erectis vage parceque ramosis, ramulis curvulis superne incrassatis, foliis patentibus siccitate appresso-imbricatis confertis rotundo-ovatis concaviusculis margine subplanis nervo valido sub apice evanido subrotundis minutis. (TAB. CLXXV. Fig. 3.)

HAB. Moist rocks? on Mount Wellington. (*Oldfield.*) (Specimens few, and without fruit.)

Stem ½ inch. *Foliage* brownish or lurid.—In habit approaching to *Pterogonium gracile.*

This is perhaps a young state of *Cryphæa. Mitten, in lit.*—PLATE CLXXV. Fig. 3; 1, portion of branch; 2 and 3, leaves:—*all magnified.*

Tribe XX. PILOTRICHEÆ.

Gen. XLIX. METEORIUM, *Bridel.*

Peristomium duplex; *externum,* dentes 16, erecti; *internum,* cilia totidem alternantia, basi libera vel membrana brevissima connexa. *Capsula* æqualis, erecta, exannulata, brevipedicellata. *Operculum* rostratum. *Florescentia* dioica. *Caulis* repens.—Surculi *penduli, ramosi.* Ramis *patentibus.*

1. **Meteorium molle** (*Leskea,* Hedw. Musc. Frond. t. 40); surculo elongato debili pendulo flexuoso, ramis subsimplicibus, foliis imbricatis subspathulato-ellipticis oblongis obtusis concavis integerrimis enerviis perichætialibus vaginantibus duplo longioribus, capsula ovata brevipedicellata, operculo rostrato, calyptra pilosiuscula dimidiata.—Stereodon (Isothecium) molle, *Mitten, in Journ. Linn. Soc. ined.*

Var. *β. majus;* ramis tumidis, seta longiori, capsula inæquali.

HAB. In dense woods, pendent from the branches of trees. (*J. D. H.*) (*Gunn,* 1602, 40.) (*Lyall,* 102.) Brown's River Gully. (*Oldfield,* 69.) Cheshunt, *Archer.*

DISTRIB. New Zealand.

2. **Meteorium cuspidiferum** (*Neckera,* Taylor, MSS.); surculo elongato ramoso pendulo flexili, ramis patentibus simplicibus, foliis laxe imbricatis erecto-patentibus siccitate erectis subappressis cordato-ovatis semi-amplexicaulibus apiculatis integerrimis subcoriaceis carinatis substriatis evanidinerviis minutissime areolatis basi auriculis denticulatis.—*Fl. N. Zeal. p.* 101. Trachypus Hornschuchii, *Mitten, in Journ. Linn. Soc. ined.*

HAB. On trees, *Gunn, Lawrence.* (Barren and scanty specimens.) Cheshunt, *Archer.*

DISTRIB. New Zealand, Norfolk Island, East Indies.

3. **Meteorium cerinum** (Hook. fil. et Wils.); caule pendulo elongato, ramis patentibus simplicibus, foliis patentibus siccitate crispato-undulatis cordato-ovatis acuminatis integerrimis evanidinerviis, auriculis subintegris.—Trachypus cerinus, *Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXV. Fig. 4.)

HAB. On trees. (Barren specimens.) (*Gunn,* 1605.) On trees, in creeks, *Archer.*

DISTRIB. New Zealand.

More robust than *M. cuspidiferum.*—*Leaves* yellowish, their auricles larger and reflexed when dry, texture more membranous, border pale; *areolæ* small, rhomboid, opaque; *alar cellules* oblong, narrow.—PLATE CLXXV. Fig. 4; 1, portion of branch and leaves; 2 and 3, leaves:—*magnified.*

4. **Meteorium filipendulum** (Hook. fil. et Wils.); caule pendulo gracili elongato, ramis patentibus flexuosis simplicibus filiformibus attenuatis, foliis erecto-patentibus apice incurvis siccitate appressis ovatis acuminatis integerrimis estriatis margine planis basi subauriculatis seminerviis. (TAB. CLXXV. Fig. 5.)

HAB. On trees. (Barren specimens only.) (*Gunn,* 26, 1606.) (*Lawrence.*)

Allied to *M. flexicaule,* Taylor, in Fl. N. Zeal. p. 101, of which it was once considered to be a slender variety.—*Leaves* less concave, with entire auricles.—PLATE CLXXIV. Fig. 5; 1, portion of stem and leaves; 2, leaf:—*all magnified.*

5. **Meteorium flexicaule** (*Leskea,* Taylor, Fl. N. Zeal. p. 101); surculo elongato pendulo flexuoso, ramis patentibus simplicibus, foliis laxe imbricatis cordato-ovatis subspathulatis acuminulatis concavis estriatis integerrimis (basi tantum subdenticulatis) nervo ultra-medio.—Trachypus flexicaulis, *Mitten, in Journ. Linn. Soc. ined.*

HAB. Cheshunt, on trees, *Archer.*

DISTRIB. New Zealand, Australia, South America.

Gen. L. CRYPHÆA, *Mohr, Bridel.*

Peristomium duplex; *externum,* dentes 16, angusti, erecti; *internum,* cilia totidem alternantia, basi libera, filiformia. *Capsula* æqualis, perichætio immersa, subsessilis, annulata. *Operculum* conicum. *Calyptra* mitræformis, conica, glabra. *Florescentia* monoica.—Caulis *repens.* Surculi *erecti, pendulive, subpinnatim ramosi.* Folia *ovata, integra;* areolis *punctiformibus.*

1. **Cryphæa consimilis** (Montagne, in Ann. Sc. Nat. Cent. v. 20); surculo ramoso, ramis distantibus patentibus filiformibus, foliis ovato-lanceolatis acuminatis margine subreflexis integerrimis nervo subcontinuo, capsula oblonga perichætio pilifero immersa, operculo conico-acuto.—*Fl. N. Zeal.* 102.

HAB. On dead timber: Coal River Tier, near Richmond. (*Oldfield,* 58.) (*Gunn,* 26.)

DISTRIB. New Zealand.

2. **Cryphæa Tasmanica** (Mitten, in Journ. Linn. Soc. ined.); "monoica, ramis elongatis inferne sæpe denudatis superne ramulis brevibus ut plurimum fertilibus dense approximatis, foliis patentibus orbiculari-ovatis acutis nervo sub summo apice evanido margine e medio ad apicem minutissime sed dense serrulato nullibi recurvo cellulis minutis ovoideis ad basin angustis elongatis, perichætialibus e basi ovali subulatis thecam ovatam longe superantibus, operculo convexo acuto peristomio interno processibus angustis dentium longitudinis in membrana brevissima, annulo duplici." (TAB. CLXXV. Fig. 9.)

HAB. On rocks: Jackey's Plain Creek, *Archer.*

More robust than *C. dilatata* or *C. Muelleri,* the margins of its leaves not recurved below, and the perichætial leaves more subulate, but of the same habit and colour. *Mitten, l. c.*—PLATE CLXXV. Fig. 6; 1, leaf; 2, perichætium; 3, teeth:—*all magnified.*

Tribe XXI. NECKERACEÆ.

Gen. LI. NECKERA, *Br. et Schimp.*

Peristomium duplex; *externum,* dentes 16, lanceolati, intus trabeculati, vix hygroscopici; *internum,* processus 16, e membrana angusta carinato-plicata hyalina cum dentibus alternantes. *Capsula* ovalis, æqualis, erecta, mollis, exannulata, immersa vel exserta. *Calyptra* cucullata, nuda.—Folia *octofariam caule inserta, distiche complanata, obliqua, transverse undulata, nitida, tenuissime areolata.* Caulis *repens.* Surculi *erecti, pinnatim ramosi.*

1. **Neckera pennata** (Hedw. Musc. Frond. t. 19); monoica, foliis ovato-lanceolatis acuminatis apice serrulatis undulatis subenerviis, perichætialibus internis elongato-lanceolatis acuminatis, capsula immersa, operculo brevirostri, calyptra parva vix infra operculum producta.—*Bryol. Europ. t.* 440. N. hymenodonta, *C. Mueller, Bot. Zeit.* 1851, *p.* 564; *Mitten, in Journ. Linn. Soc. ined.*

HAB. On trees. (*Gunn,* 1601.) Johnny's Creek. (*Oldfield,* 66.) Rivulets and damp copses, on trunks and branches of trees, *Archer.* Bek River, below Launceston, *Mossman.*

DISTRIB. New Zealand, Europe, North and South America, South Africa, East Indies.

Gen. LII. OMALIA, *Bridel.*

Peristomium Hypni, duplex. *Capsula* ovata, cernua, longipedunculata, annulata. *Operculum* rostratum. *Calyptra* dimidiata.—Caulis *repens, stolonifer.* Surculi *ascendentes, pinnatim vel irregulariter ramosi.* Folia *octofariam inserta, distiche imbricata, complanata;* lateralia *obliqua, asymmetrica, basi uno latere inflexa, cæterum plana;* verticalia *minute areolata;* nervo *brevi vel obsoleto.* Flores *monoici vel dioici.*

1. **Omalia falcifolia** (Hook. fil. et Wils. Fl. N. Zeal. 115. t. 92. f. 1); dioica, surculo vage subpinnatim ramoso, ramis complanatis subsimplicibus, foliis distiche imbricatis oblongo-acinaciformibus obtusis enerviis integerrimis, seta lævi, capsula elliptico-oblonga nutante, operculo conico.—Hypnum falcifolium, *Nob. in Lond. Journ. Bot.* 1844, *p.* 554.

HAB. Tasmania. (Barren specimens only.) (*Gunn.*)

DISTRIB. New Zealand.

Gen. LIII. TRACHYLOMA, *Bridel.*

Peristomium duplex; *exterius*, dentes 16, angusti, subnodulosi, duri; *interius*, cilia totidem cum iis alternantia, e membrana brevi orta, angusta, carinata, nodulosa. *Calyptra* cuculliformis. *Capsula* erecta, oblonga, subæqualis, curvula, exannulata.—Folia *subenervia, complanata*. Habitus *dendroideus*. Caule *repente*. Surculo *superne pinnatim ramoso.*—*Fl. N. Zeal. p.* 103.

1. **Trachyloma planifolium** (*Neckera planifolia*, Hook. Musc. Exot. t. 23); dioicum, surculo erecto pinnatim ramoso, ramis complanatis, foliis distiche imbricatis erecto-patentibus ovatis apice serratis subenerviis, capsula erecta subcylindrica, operculo conico subulato.—*Bridel, Bryol. Europ.* ii. 278; *Mitten, in Journ. Linn. Soc. ined.*

HAB. On dead trees, in the forests of the Esk River, *Mossman.*

DISTRIB. New Zealand.

Tribe XXII. ISOTHECIACEÆ.

Gen. LIV. ISOTHECIUM, *Bridel.*

Peristomium duplex; *externum*, dentes 16, ut in *Hypno*; *internum*, membrana in processus 16 carinatos cum vel absque ciliis interpositis profunde divisa. *Calyptra* cuculliformis. *Capsula* erecta, æqualis, vel e curvatura pedicelli cernua, subæqualis, annulata.—Habitus *dendroideus*. Rhizoma *repens*. Surculi *inferne nudi, rigidi, superne pinnatim ramosi.*

§ 1. *Fronde diffusa, suberecta.*

1. **Isothecium Arbuscula** (*Hookeria*, Smith, Linn. Trans. ix. p. 280. t. 23); dioicum, surculo bipinnatim ramoso, foliis imbricatis patentibus ovatis concavis integerrimis basi obsolete binerviis, seta breviuscula flexuosa, capsula ovata suberecta vel cernua, operculo conico.—Hypnum Arbuscula, *Hook. Musc. Exot.* 112; *Schwægr. Suppl. t.* 300.

Var. *β. deflexum*; surculo laxius ramoso arcuato deflexo apice radicante, foliis remotioribus acutioribus minus concavis.—Stereodon (Isothecium) deflexus, *Mitten, in Journ. Linn. Soc. ined.*

HAB. On trees, in dense forests. (*Gunn*, 42, 43, 1595 *a.*) St. Patrick's River. (*Gunn*, 1595 *b*, 1596.) Johnny's Creek, Back River Gully. (*Oldfield*, 87, 88.)

DISTRIB. New Zealand.

2. **Isothecium gracile** (Hook. fil. et Wils.); dioicum, caule ramoso, ramis gracilibus recurvis, foliis erecto-patentibus secundis ellipticis concavis obtusiusculis subdenticulatis enerviis, perichætialibus squarrosis acuminatis, seta longiuscula lævi, capsula ovata cernua, operculo conico.—*Fl. Antarct. part* 1. *p.* 29. *t.* 61. *f.* 3; *Fl. N. Zeal. p.* 106, *et* Hypnum gracile *eorund. l. c. p.* 112. Stereodon (Isothecium) gracilis, *Mitten, in Journ. Linn. Soc. ined.*

HAB. On stones, in rivulets: Jackey's Plain Creek, near Cheshunt, *Archer.*

DISTRIB. Lord Auckland's Islands, New Zealand.

3. **Isothecium pumilum** (Hook. fil. et Wils.); dioicum, caule dendroideo pinnatim ramoso inferne squamoso, ramis complanatis, foliis quadrifariis ovatis vel oblongo-ovatis serrulatis nervo tenui ultra medio, perichætialibus subsquarrosis ovato-ligulatis, seta breviuscula, lævi, capsula ovata cernua annulata, operculo rostrato.—Neckera (Thamnium) rivalis, *Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXV. Fig. 7.)

HAB. On rocks. (*Gunn.*) On stones and rocks: copse, West End Rivulet and Stackhouse Falls, Cheshunt, *Archer.*

Thrice as small as *I. pandum*, Hook. fil. et Wils. Fl. N. Zeal. p. 105. t. 89. f. 1.—*Leaves* more evidently serrate, with a short, very faint nerve. *Stem* 1 inch. *Seta* scarcely ¼ inch. *Operculum* as long as the capsule. *Peristome* double; outer teeth pale yellow.—PLATE CLXXV. Fig. 7; 1, part of stem and leaves; 2, leaf; 3, perichætium and capsule, etc.:—*all magnified.*

§ 2. HYPNODENDRON.—*Rami in frondem horizontalem deltoideo-subrotundam dispositi. Innovationes e basi frondis orti. Capsula striata.*

4. **Isothecium spininervium** (*Hypnum*, Hook. Musc. Exot. t. 29); dioicum, comosum, ramis simplicibus complanatis, foliis appresso-patulis subdistiche imbricatis ovatis acutis margine dorsoque serratis solidinerviis, capsula oblonga sulcata cernua, operculo rostrato capsula breviore.—*Schwægr. Suppl. t.* 258. Trachyloma arcuatum, *Mitten, in Journ. Linn. Soc. ined.*

HAB. In woods, rare. Back River Gully, New Norfolk. (*Gunn.*) (*J. D. H.*) (*Oldfield*, 65.) On the ground, and on stones in the bed of rivulets: Cheshunt, *Archer.*

DISTRIB. New Zealand, Australia.

5. **Isothecium Archeri** (Mitten); "dioicum, ramis erectis inferne simplicibus sparse foliosis superne pulchre pinnatis plumiformibus, ramulis patentibus distichis in frondem brevem subtriangularem dispositis, foliis bifarie compressis ovato-lanceolatis acutis nervo percurrente, dorso apice denticulato, marginibus simpliciter serratis, cellulis longitudine circiter $\frac{1}{500}$ latitudine $\frac{1}{4000}$ unc. metientibus dorso minute papilloso-punctatis, seriebus foliorum in latere dorsali minoribus sed conformibus, perichætialibus e basi late ovata tenui acuminatis erectis, theca in pedunculo vix unciali horizontalis oblonga sulcata, operculo longi-curvi-rostrato, peristomio normale."—Trachyloma Archeri, *Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXV. Fig. 8.)

HAB. Ovens Creek, Cheshunt, *Archer.*

Two or three inches in height, pale yellowish-green, shining. Nearly allied to *H. arcuatum*, Hedw., but its branches are more regularly disposed, forming a subtriangular frond, and readily distinguished by its minutely dotted leaves and short capsule. *Mitten, l. c.*—PLATE CLXXV. Fig. 8; 1, leaf; 2, ditto of perichætium; 3, capsule:—*all magnified.*

6. **Isothecium comosum** (Labill. Pl. Nov. Holl. ii. 107. t. 253. f. 2); dioicum, dense cæspitosum, caule tomentoso apice comoso, ramis subverticillatis brevibus densis suberectis, foliis patentibus subsecundis rigidis e basi subauriculata ovato-lanceolata subito acuminatis apice serrulatis nervo crasso solido tereti dorso lævi excurrente setaceis, perichætialibus longioribus erectis, capsula in pedunculo mediocri pendula oblonga sulcata, operculo longirostri.—*Bridel, Bryol. Univ.* ii. 374. Hypnum comosum, *Schwægr. Suppl. t.* 91.

HAB. Tasmania. (Barren specimens only.) (*Gunn.*)

DISTRIB. New Zealand, Lord Auckland's Islands.

7. **Isothecium Sieberi** (*Hypnum*, C. Mueller, Musc. Syn. ii. 504); dioicum, laxe cæspitosum, caule robusto tomentoso apice lateraliter (nec verticillatim) comoso, ramis crassis curvatis cirrhatis apice

subcuspidatis, foliis erecto-patentibus confertis anguste lanceolatis sensim acuminatis superne grosse serratis nervo valido concolore excurrente (acumen haud omnino occupante) carinatis margine subincrassatis, setis aggregatis mediocribus tortis, capsula horizontali sulcata, operculo longirostri.—Trachyloma comosum, *Mitten, in Journ. Linn. Soc. ined.*

HAB. Woods on Mount Wellington. (*J. D. H.*) (*Oldfield*, 64, 103.) River Acheron, *Gunn*, 1593. Cheshunt, *Archer*.

DISTRIB. New Zealand and Lord Auckland's Islands.

Leaves longer than in *I. comosum*, more crowded, with large serratures and areolæ, more distinctly striated when dry; nerve less solid, not cylindrical, but keeled at the back. *Branches* longer, deflexed. *Habit* more robust. *Colour* greenish, not fulvous.

8. **Isothecium Colensoi** (Hook. fil. et Wils.); dioicum, laxe cæspitosum, caule breviusculo tomentoso apice lateraliter pinnatim comoso, ramis breviusculis decurvatis, foliis laxiuscule patentibus subsecundis rigidiusculis e basi cordato-lanceolata setaceo-acuminatis apice argute serratis nervo crassiusculo inferne dorso punctulata apice argute spinuloso excurrente, seta prælonga, capsula subpendula elongate cylindrica curvula octosulcata, operculo longirostri.—I. comosum, *Hook. fil. et Wils. Fl. N. Zeal.* 106, *ex parte.* (TAB. CLXXVI. Fig. 1.)

HAB. Tasmania. (Barren specimens only.) (*Gunn.*)

DISTRIB. New Zealand.

Overlooked as a variety of *I. comosum* in the 'Flora of New Zealand,' but on examination it appears to be quite distinct. It differs from both of the preceding species in the elongated capsule and seta, and from *Hypnum comatum*, C. Mueller, Syn. Musc. ii. 692, in the more strongly and sharply serrated apex of the leaf, which has the nerve constantly punctulate at the back, more solid at the excurrent apex, where it is cylindrical and spinulose.—*Areolæ* of the leaf wider; alar cellules oval-oblong, numerous, not coloured. *Colour* of the foliage deeper green. *Stem* shorter than in *I. Sieberi*. *Branches* few, scarcely ½ inch long, not attenuated, more rigid, not whorled, but forming a lateral frond. *Capsule* (with the operculum) about ¼ inch long. *Teeth* of the peristome pale yellow.

"This appears to me to be the *H. comatum, C. Mueller.*" *Mitten, in lit.*—PLATE CLXXVI. Fig. 1; 1, leaf; 2, capsule:—*both magnified.*

Tribe XXIII. HYPNACEÆ.

Gen. LV. HYPNUM, *Linn.*

Peristomium duplex; *externum*, dentes 16, lanceolati, reflexiles, intus trabeculati, linea media notati; *internum*, membrana carinato-sulcata in processus 16 carinatos ciliis interpositis mediotenus fissa. *Calyptra* cuculliformis, glabra. *Capsula* inæqualis, arcuata, cernua, plerumque annulata, longe pedicellata.—Habitus *varius.* Caulis *plerumque repens, vage vel pinnatim ramosus.*

§ 1. TAMARISCINA.—*Caule pinnatim ramoso, stupa viridi e fibris ramosis composita villoso.*

1. **Hypnum læviusculum** (Mitten); "dioicum, *H. tamariscino* simillimum, caule foliolis brevibus dense vestito, foliis ejusdem latitudinis subæquilateri triangularibus nervo crasso concolori in acumen angustum elongatum flexuosum excurrente, marginibus inferne recurvis integerrimis cellulis minutis subobscuris læviusculis, rameis basi ovatis acuminatis obtusiusculis concavis ramulinisque ovato-oblongis compressis obtusis obscuris subintegerrimis minutissime papillosis sublævibus, perichætialibus erectis pallidis ovato-lanceolatis in acumen elongatum flexuosum subserrulatum attenuatis, margine apicem versus partis latioris ciliato, theca in pedunculo elongato rubro cylindrica arcuata horizontalis peristomio normale."—Leskea læviuscula, *Mitten, in Journ. Linn. Soc. ined.*

HAB. Cheshunt, without fruit, *Archer*.

DISTRIB. New Zealand.

Size, habit, and colour of *H. tamariscinum*, but with leaves more nearly resembling those of *H. cymbifolium*, Dz. et Molk., having the nerve excurrent into a long, flexuose, slender point, and scarcely anywhere serrulate or papillose. *Mitten, l. c.*

2. **Hypnum furfurosum** (Hook. fil. et Wils. Fl. N. Zeal. 107. t. 88. f. 7); dioicum, caule elongato rigidulo procumbente furfuroso crebre bipinnato, ramulis gracilibus attenuatis, foliis caulinis squarrosis cordato-acuminatis carinato-concavis plicatis evanidinerviis rameis e basi patula erectiusculis siccitate incurvis ovatis acuminatis apice denticulatis dorso papillatis evanidinerviis perichætialibus anguste acuminatis denticulatis, seta lævi, capsula oblonga cernua, operculo rostrato.—Leskea hastata (Hypnum), *C. Mueller*; *Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXVI. Fig. 2.)

HAB. On dead timber and stones: Back River Gully. (*Gunn.*) (*Oldfield*, 80, 323.) On stones, by rivulets: Ovens Creek, Cheshunt, and Cumming's Head, Western Mountains, *Archer*.

DISTRIB. New Zealand.

PLATE CLXXVI. Fig. 2; 1 and 2, leaves; 3, capsule:—*all magnified.*

3. **Hypnum unguiculatum** (Hook. fil. et Wils.); dioicum, caule tenui procumbente plus minus remote bi-(subtri-)pinnato paraphyllis parcis vestito, ramis ramulisque patentibus longiusculis attenuatis gracillimis, foliis caulinis patentibus cordato-acuminatis distantibus subplicatis subintegris ramulinis erecto-patentibus siccitate arcuato-incurvis ovatis acutis valde concavis subintegris dorso lævibus, nervo tenui pellucido evanido areolis minute rotundis subopacis, perichætialibus longe piliformi acuminatis denticulatis intimis laciniatis, seta lævi, capsula oblonga arcuata, operculo rostrato. (TAB. CLXXVI. Fig. 3.)

HAB. Yorktown. (*Lawrence.*) (*Gunn*, 1598, 37.) Rocks: North-west Bay. (*Oldfield*, 313 *b.*)

DISTRIB. New Zealand. (*Sinclair.*)

Allied to the last, but more slender in habit.—*Stem* about 2 inches long, distantly branched. *Stem-leaves* small, not concealing the stem. *Branch-leaves* distant, much bent inwards when dry, but not appressed. *Seta* 1 inch. *Vaginula* hairy. *Teeth* yellow, longer than in *H. furfurosum*. *Inner peristome* reddish, with cilia.—A larger species than *H. sparsum*, Hook. fil. et Wils. Fl. N. Zeal. 109. t. 89. f. 5); leaves more acute, very concave, and more incurved when dry.—PLATE CLXXVI. Fig. 3; 1, portion of branch; 2, leaf; 3, ditto of perichætium; 4, capsule, with calyptra; 5, capsule and operculum:—*all magnified.*

4. **Hypnum Stuartii** (C. Mueller, Bot. Zeit. 1856, p. 459); "*H. hastato* simillimum, dioicum, aurescens, sed caulis inordinate ramosus, vix pinnatus, ramulis longioribus substoloniformibus instructus, filis longioribus confervoideis vel foliaceis obtectis, folia caulina majora, e basi late hastata bullato-plicata lanceolato-acuminata reflexa, margine plana vel convexa, ubique e cellulis rotundatis incrassatis tenuiter papillosis areolata, nervo flavido canaliculato ante apicem evanido percursa, ramulina multo minora ovato-lanceolata, breviter acuminata, subflexuosa, magis æqualia, vix bullata, nervo tenuiore instructa, e cellulis rugulosis haud incrassatis areolata, perichætialia e basi longe vaginante late plicata pallida, margine hic illic revoluta, elongate incrassate areolata in acumen longissimum loriforme flexuosum crenulatum producta, ante apicem ciliis capillaribus lævissimis flexuosis elongatis vel brevioribus fimbriata, excurrentinervia, paraphyses numerosissimas elongatas includentia, theca in pedunculo breviusculo lævi rubente pendula turgide oblonga, peristomium internum aureum secedens, ciliis ternis brevioribus interpositis."—*Mitten, in lit.*

HAB. Tasmania, *Stuart.*

§ 2. ADUNCA.—*Foliis falcatis, nervosis.*

5. **Hypnum hispidum** (Hook. fil. et Wils. Fl. Antarct. 28. t. 61. f. 2); dioicum, caule arcuato

vage vel subpinnatim ramoso, foliis imbricatis secundis rigidis e basi ovata subplicata longe subulato-setaceis integerrimis nervo crasso excurrente, seta breviuscula lævi, capsula ovata cernua, operculo curvirostro.—*Fl. N. Zeal. p.* 107. Leskea hispida, *Mitten, in Journ. Linn. Soc. ined.*

HAB. Stones in running water: Back River Creek. (Barren specimens.) (*Gunn*, 44.) (*Oldfield*, 120, 121.) Bank by Stackhouse Falls, on fossiliferous limestone: Cheshunt, *Archer.*

DISTRIB. New Zealand, Norfolk Island, Australia, Lord Auckland's Islands.

6. **Hypnum fluitans** (Linn. Fl. Suec. 1074); monoicum, caule subpinnatim ramoso tenui molle, foliis caulinis remotis rameis falcato-secundis lanceolato-acuminatis evanidinerviis, capsula longe pedunculata oblonga arcuata cernua, operculo subconico.—*Bryol. Eur. t.* 602.

HAB. In wet places: Yorktown. (Barren specimens.) (*Gunn*, 1626.)

DISTRIB. Europe, North America, Hermite Island, Campbell's Island.

§ 3. *Foliis seminerviis patentibus, undique imbricatis.*

a. PRÆLONGA.—*Seta scabra. Operculo rostrato.*

7. **Hypnum muriculatum** (Hook. fil. et Wils. Fl. N. Zeal. 108. t. 89. f. 3); monoicum, caule procumbente subpinnatim ramoso, ramis brevibus simplicibus subcompressis, foliis patentibus cordato-ovatis acuminatis subserrulatis apice subpiliformi attenuatis nervo ultramedio, seta scabra breviuscula, capsula oblonga horizontali, operculo longirostri.

HAB. Circular Head. (*Gunn*, 1694.) Hobarton. (*J. D. H.*)

DISTRIB. New Zealand, Norfolk Island.

8. **Hypnum austrinum** (Hook. fil. et Wils. Fl. N. Zeal. 108. t. 89. f. 4); monoicum, caule repente vage ramoso, ramis suberectis incurvis subsimplicibus, foliis patentibus subsecundis cordato-ovatis acutis concavis serrulatis nervo ultramedio, perichætialibus erectis attenuatis, seta scabra, capsula ovata cernua, operculo rostrato.

HAB. Wet places, by streams? Johnny's Creek and Back River Gully. (*Oldfield*, 85, 294.)

DISTRIB. New Zealand.

In habit much like *H. ruscifolium*, Neck., but differing in the rough seta, more concave, less rigid leaves, and thinner nerve.

9. **Hypnum asperipes** (Mitten, in Journ. Linn. Soc. ined.); "monoicum, caule procumbente, ramis pinnatis, foliis patentibus latissime ovatis acuminatis serrulatis nervo tenui medio evanido cellulis longitudine circiter $\frac{1}{400}$ latitudine $\frac{1}{3000}$ unc. metientibus, perichætialibus latis in acumen breve attenuatis theca in pedunculo subunciali aspero oblongo-ovalis horizontalis operculo longirostrato peristomio normali. (TAB. CLXXVI. Fig. 4.)

HAB. Cheshunt, *Archer.*

More densely branched, and with more acuminated leaves than *H. hians*, Hedw., to which in size and general appearance it is nearly allied. *Mitten, l. c.*—PLATE CLXXVI. Fig. 4; 1, leaf; 2, perichætium; 3, capsule:—*all magnified.*

b. CONFERTA.—*Seta lævi. Operculo rostrato.*

10. **Hypnum collatum** (Hook. fil. et Wils.); monoicum, caule procumbente pinnatim ramoso, ramis robustis compressis, foliis patulis late ovatis acuminulatis concavis serrulatis seminerviis angustissime lineari-areolatis, perichætialibus longius acuminatis recurvis, seta lævi, capsula cernua oblonga arcuata, operculo longirostri.—H. confertum, *var.* majus, *Fl. N. Zeal. p.* 108. H. tenuifolium, *Hedw. Sp. Musc. t.* 75; *Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXVI. Fig. 5.)

Var. β. *laxifolium;* caule elongato, ramis longioribus, foliis distantibus, seta longiore.

Var. γ. *minus;* caule erecto gracili parce ramoso, ramis erectis gracilibus vix compressis, foliis erecto-patentibus.

Var. δ; capsula inclinata recta fere symmetrica.

Hab. On decayed wood, etc., in damp, shady places. (*Gunn.*) Var. β. Back River Gully. (*Oldfield,* 83.) Var. γ. At the foot of trees: Coal River Tier, Richmond. (*Oldfield.*)

Distrib. New Zealand.

In general aspect much like *H. serrulatum,* Hedw., but distinguished by the pinnated disposition of the branches, and wider, concave, minutely-serrated leaves of closer texture. Var. β has the setæ nearly 1½ inch long. Var. γ is a small form, closely resembling *H. megapolitanum,* Bland., but the leaves are roundish-ovate, not cordate, more shortly acuminated; areolæ very narrow and elongated; alar cellules few and inconspicuous.—Plate CLXXVI. Fig. 5; 1, part of branch and leaf; 2, leaf; 3, perichætium and capsule; 4, capsule:—*all magnified.*

11. **Hypnum aristatum** (Hook. fil. et Wils.); monoicum, caule pinnatim ramoso, ramis gracilentibus attenuatis, foliis patentibus subcompressis siccitate laxe flexuosis ellipticis piliformi-acuminatis concavis serrulatis (margine haud reflexis), perichætialibus erectis acuminatis, seta lævi, capsula oblonga cernua arcuata, operculo brevirostri. (Tab. CLXXVI. Fig. 6.)

Hab. Growing with *H. collatum.* (*Gunn,* 48 *b.*) Cheshunt, *Archer.*

Distrib. New Zealand.

A smaller species, with leaves almost piliferous, dark green, and not glossy.—*Peristome,* outer reddish-brown; inner yellow, with solitary cilia. *Spores* small, yellow. *Annulus* small, adhering to the mouth of the capsule.—Plate CLXXVI. Fig. 6; 1, part of branch and leaves; 2, leaf; 3, perichætium; 4, capsule:—*all magnified.*

c. Rutabula.—*Seta scabra. Operculo conico.*

12. **Hypnum rutabulum** (Linn. Sp. Pl. 1590); monoicum, caule vage ramoso, foliis laxe imbricatis patulis ovato-acuminatis serrulatis nervo ultramedio siccitate striatis, seta scabra, capsula ovata cernua, operculo conico.—*Hedw. Musc. Frond. t.* 12. Brachythecium rutabulum, *Br. et Schimp. Bryol. Eur. t.* 543.

Var. 2; floribus synoicis turgidis.

Hab. On the ground: Brown's River, Johnny's Creek. Swamps on Mount Wellington, and at the Falls, New Norfolk. Back River Gully. (*Gunn,* 1690.) (*Oldfield,* 82, 96, 145, 326 *b.*) On trees: Long Hill, Cheshunt, *Archer.* Var. 2. Back River Gully. (*Oldfield,* 84.)

Distrib. Europe, America, Antarctic Islands.

13. **Hypnum campestre** (*Brachythecium,* Bruch, Bryol. Europ. 13. t. 11); "monoicum, procerum, laxe cæspitosum, caule longe prostrato vel ascendente, valde ramoso, ramis flexuoso-ascendentibus vage vel subpinnatim ramulosis dense foliosis, foliis erecto-patentibus, longe ovato-lanceolatis brevius longiusve subulato-acuminatis, tenuicostatis, pluries irregulariter sulcatis, margine serratis, sericeo-nitidis, lutescentibus, perichætialibus longe subulatis, subula recurva, capsula in pedicello superne obsolete scabro incurvo-cernua, ovali- et oblongo-cylindrica, curvula, operculo conico."—*Mitten, in lit.*

Hab. Woolmers, near Longford, *Archer.*

Distrib. Europe, Asia, North America.

14. **Hypnum paradoxum** (Hook. fil. et Wils. Fl. Antarct. ii. p. 419. t. 155. f. 2); caule repente subpinnato, foliis falcate-secundis ovato-lanceolatis acuminatis striatis serrulatis ruptinerviis, seta scabra, theca cernua obovato-oblonga.—*Mitten, in Journ. Linn. Soc. ined.*

HAB. Cheshunt, *Archer*.

DISTRIB. Hermite Island, South-west Australia.

§ 4. *Foliis squarrosis.*

a. STELLATA.—*Capsula lævi.*

15. **Hypnum decussatum** (Hook. fil. et Wils. Fl. N. Zeal. p. 110. t. 90. f. 2); dioicum, caule procumbente pinnatim ramoso, ramis simplicibus, foliis patulis squarroso-recurvis ovatis longiuscule acuminatis subintegris nervo subcontinuo.

HAB. Bog near the Derwent, New Norfolk. (*Oldfield*, 91.)

DISTRIB. New Zealand.

A larger Moss than *H. glaucocarpon*, Schwægr. Suppl. t. 228.—*Leaves* reddish or tawny, nerved almost to the apex, where they are more tapering. *Fruit* not yet observed.

b. *Capsula sulcata.*—PTYCHOMNION, Hook. fil. et Wils.

16. **Hypnum aciculare** (Labill., Bridel, Musc. Recent. ii. 2. 158. t. 5. f. 2); dioicum, caule vage ramoso, ramis simplicibus elongatis crassis, foliis squarroso-patulis ovatis longius acuminatis apice inciso-serratis enerviis, capsula subcylindrica arcuata sulcata, operculo longirostri.—*Schwægr. Suppl. t.* 92. Stereodon (Achyrophyllum) acicularis, *Mitten, in Journ. Linn. Soc. ined.*

HAB. On the earth, in woods, *J. D. H., Lyall.* Back River Creek. (*Gunn*, 38.) (*Oldfield*, 23.) Cheshunt, *Archer*.

DISTRIB. Australia, New Zealand, Fuegia, Antarctic Islands, South America, Society Islands.

§ 5. COCHLEARIFOLIA.—*Foliis valde concavis, obtusis, imbricatis, subenerviis.*

17. **Hypnum cochlearifolium** (Schwægr. Suppl. t. 88); dioicum, caule elongato vage ramoso, ramis crassis simplicibus erectis, foliis patentibus imbricatis subrotundis obtusis hemisphærico-concavis integerrimis enerviis, perichætialibus vaginantibus, capsula ovata subcernua, operculo conico.—Hypnum flexile, *Hook. Musc. Exot. t.* 10 (*non Swartz, Fl. Ind. Occ.*). Isothecium flexile, *Bridel, Bryol. Univ.* (*ex parte*). Stereodon (Isothecium) cochlearifolius, *Mitten, in Journ. Linn. Soc. ined.*

HAB. Hobarton, *J. D. H.* On rocks: Elliott Rivulet, Meander River, *Archer*.

DISTRIB. New Zealand, Australia, Lord Auckland's Islands, Campbell's Island.

18. **Hypnum clandestinum** (Hook. fil. et Wils. Fl. N. Zeal. 111. t. 90. f. 3); quasi monoicum, fl. masc. nidulante, caule repente, surculis erectis vage ramosis subincurvis rigidulis, foliis patulis imbricatis subrotundis obtusissimis inflato-concavis subenerviis, perichætialibus subsquarrosis, seta breviuscula, capsula ovata cernua, operculo conico.

HAB. Banks of Huon River, on moist trunks of trees. Back River Gully. (*Gunn*, 41.) (*Oldfield*, 73, 78.) Near the summit of Mount Wellington, *J. D. H.*

DISTRIB. New Zealand.

19. **Hypnum divulsum** (Hook. fil. et Wils. Fl. N. Zeal. 111. t. 90. f. 4); dioicum, surculis erectis rigidis vage ramosis, ramis subsimplicibus subincurvis, foliis patulis laxe imbricatis obovato-subrotundis concavis obtusiusculis minute serrulatis seminerviis areolis punctiformibus, perichætialibus squarrosis, capsula ovata cernua, operculo conico acuminato.

HAB. Shady places: Gully, foot of Grass-tree Hill. Johnny's Creek and Brown's River. (*Oldfield.*) Back River. (*Gunn,* 1686, 41.)

DISTRIB. New Zealand.

Smaller than the preceding.

20. **Hypnum chlamydophyllum** (Hook. fil. et Wils. Fl. Antarct. t. 61. f. 1); monoicum, caule prostrato vage ramoso, ramis simplicibus elongatis cuspidatis erectis, foliis patentibus imbricatis quadrato-rotundatis basi truncatis auriculatis concavis integerrimis auriculis pellucidis, nervo evanido brevi, seta elongata, capsula ovato-oblonga cernua, operculo conico.—Stereodon auriculatus (Hypnum), *Mont.; Mitten, in Journ. Linn. Soc. ined.*

Hab. St. Patrick's River. (*Gunn*, 1594, 1589.) On moist banks: Mount Wellington. (*J. D. H.*) Back River Gully. (*Oldfield*, 71, 75, 76, 257.) On logs: Western Creek, near Cheshunt, *Archer*. Near the Derwent, *Mossman*.

Distrib. New Zealand, Cape Horn, Campbell's Island.

§ 6. Cupressiformia.—*Foliis secundis, enerviis.*

21. **Hypnum cupressiforme** (Linn. Sp. Pl. 1592); dioicum, caule vage pinnatimque ramoso, ramis incurvis, foliis falcato-secundis ovato-lanceolatis acuminatis concavis enerviis cellulis alaribus opacis quadratis, capsula subcylindrica subcernua, operculo conico cuspidato.—*Hedw. Musc. Frond. t.* 33.

Var. *β. minus;* ramis gracilibus, foliis angustioribus.—Stereodon cupressiformis, *var.* Mossmani. Hypnum Mossmanianum, *C. Mueller, Bot. Zeit.* 1851, *p.* 565; *Mitten, in Journ. Linn. Soc. ined.*

Hab. Moist rocks: North-west Bay. (*Gunn.*) Mount Wellington, *J. D. H.* Back River Gully. (*Oldfield*, 81, 89, 102, 313.) Fern-tree Valley, Mount Wellington, *Mossman*.

Distrib. All parts of the world.

22. **Hypnum patale** (Hook. fil. et Wils. Fl. N. Zeal. 112. t. 90. f. 6); dioicum, caule procumbente pectinatim ramoso, ramis superne planiusculis confertis patulis, foliis lateralibus distiche patulis omnibus falcato-secundis ovato-lanceolatis acuminatis apice subserrulatis enerviis, perichætialibus setaceo-acuminatis erectis serratis, seta elongata, capsula ovato-oblonga horizontali, operculo conico apiculato.—Stereodon chrysogaster (Hypnum), *C. Mueller; Mitten, in Journ. Linn. Soc. ined.*

Hab. On trees. (*Gunn.*) (*Oldfield.*) Cheshunt, *Archer*.

Distrib. New Zealand.

Allied to *H. cupressiforme.*—*Leaves* more spreading, pale-green, glossy, yellowish at the base.

23. **Hypnum leptorrhynchum** (Bridel, Bryol. Univ. ii. 621, ex parte); monoiçum, caule repente subpinnatim ramoso, foliis falcato-secundis lineari-lanceolatis acuminatis siccitate torquescentibus apice serrulatis enerviis margine subreflexis, seta gracili lævi, capsula oblonga nutante, operculo longirostri.—*Schwægr. Suppl. t.* 93. Stereodon cyparoides, *Bridel; Mitten, in Journ. Linn. Soc. ined.*

Hab. Hobarton, etc., on trees, *Gunn, Stuart, J. D. H.* Johnny's Creek. (*Oldfield*, 98.) On logs, frequent: Cheshunt, *Archer*.

Distrib. New Zealand, Australia, Antarctic Islands, Isle of Bourbon, South America, South Africa.

24. **Hypnum cyparioides** (Bridel, Musc. Recent. ii. 2. 138. t. 3. f. 4); *H. leptorrhyncho* simillimum, foliis minus falcatis latioribus subdistiche lateraliter patentibus brevioribus, perichætialibus angustioribus sensim acuminatis, seta gracillima breviori apice arcuata, capsula ovali pendula minuta sub ore constricta leptoderma.

Hab. South Port, with the preceding. (*Stuart.*)

Distrib. Australia.

25. **Hypnum cerviculatum** (Hook. fil. et Wils. Fl. N. Zeal. p. 113. t. 91. f. 2); dioicum, caule repente subpinnatim ramoso, foliis falcato-secundis lanceolatis acuminatis apice attenuatis serratis margine

vix reflexis enerviis, perichætialibus ovato-lanceolatis apiculatis serratis erectis, seta scabriuscula crassa breviore, capsula oblonga horizontali basi strumulosa exannulata, operculo longirostri.—H. leptorrhynchum, var. β, *Hook. fil. et Wils. Fl. Antarct. pt.* 1. *p.* 141. Stereodon cerviculatus, *Mitten, in Journ. Linn. Soc. ined.*

HAB. On trees: Hobarton. (*Gunn,* 48.) (*J. D. H.*) On logs: Cheshunt, *Archer.*

DISTRIB. New Zealand, Lord Auckland's Islands.

26. **Hypnum limatum** (Hook. fil. et Wils. Fl. Antarct. ii. p. 545); dioicum, caule subpinnatim ramoso, ramis incurvis simplicibus, foliis secundis falcatisve ovato-lanceolatis subpiliferis subintegris enerviis, perichætialibus elongatis recurvis subpiliferis subserrulatis, capsula cylindrica suberecta, operculo conico-apiculato brevi.—Hypnum Terræ-Novæ, *var. β.* australe, *Hook. fil. et Wils. Fl. Antarct.* i. *p.* 142. *t.* 61. *f.* 4.

Var. foliis minoribus falcato-secundis vix piliferis, perichætialibus angustioribus, seta longiori, capsula arcuata.

HAB. Damp gullies: Brown's River. (*Oldfield,* 304.) (*Lyall.*) Cheshunt, *Archer.*

DISTRIB. Australia, Lord Auckland's Islands, Campbell's Island.

27. **Hypnum tenuirostre** (Hook. Musc. Exot. t. 111); monoicum, caule repente divisionibus subpinnatim ramosis, ramis elongatis erectis, foliis falcato-secundis confertis ovato-lanceolatis acuminatis concavis subintegris enerviis, capsula ovato-oblonga cernua, operculo longirostri.

HAB. St. Patrick's River. (*Gunn,* 1600.) (*Oldfield.*)

DISTRIB. New Zealand.

28. **Hypnum homomallum** (C. Mueller, Musc. Syn. ii. 336); dioicum, foliis erecto-patentibus secundis latiuscule ovato-acuminatis cochleariformi-concavis integerrimis enerviis margine reflexis cellulis alaribus quadratis, perichætialibus angustioribus strictis, seta breviuscula lævi, capsula subcernua oblonga curvula, operculo longirostri.—Leskea homomalla, *Hampe, Ic. Musc.* 1844, *t.* 6. Hypnum Drummondii, *Taylor, Lond. Journ. Bot.* 1846, *p.* 63.

HAB. On rocks, not uncommon. (*Gunn,* 36, 1691.) (*Oldfield,* 64.) Rocks facing the sea at Eaglehawk Neck, *J. D. H.* South Port, *Stuart.*

DISTRIB. Australia, New Zealand?

Leaves purplish or golden-brown, glossy.

29. **Hypnum Jolliffii** (Mitten, in Journ. Linn. Soc. ined.); "monoicum, *H. Loxensi* habitu staturaque simile, ramis apicibus cuspidatis, foliis patentibus laxe imbricatis ovali-ellipticis acuminatis concavis obsolete binerviis enerviisve integerrimis vel apice subserrulatis cellulis angustis elongatis alaribus utrinque tribus majoribus hyalinis perichætialibus interioribus tribus erecto-patentibus caulinis conformibus, theca in pedunculo gracili parva ovali inclinata horizontalive, operculo rostro æquilongo, peristomio dentibus flavis processibus solidis ciliis in uno breviore coalitis in membranam ad $\frac{2}{7}$ exsertis, annulo simplici."—Stereodon Jolliffii, *Mitten, in Journ. Linn. Soc.* (TAB. CLXXVII. Fig. 1.)

HAB. On stones and the earth: Western Creek, Cheshunt, *Archer.*

DISTRIB. New Zealand.

Very much like *H. Loxense*, Hook., but with a leaf of a different form. *Mitten, l. c.*—PLATE CLXXVII. Fig. 1; 1 and 2, leaves; 3, perichætium; 4, capsule; 5, peristome:—*all magnified.*

30. **Hypnum contiguum** (Hook. fil. et Wils.); monoicum, caule subpinnatim ramoso, ramis apice subcuspidatis, foliis erecto-patentibus sursum subsecundis strictis laxiusculis lanceolatis piliformi-acuminatis

integerrimis enerviis concaviusculis basi flavidis cellulis alaribus vesiculæformibus, perichætialibus longioribus erectis, seta breviuscula lævi, capsula pendula elliptico-oblonga, operculo longirostri. (TAB. CLXXVII. Fig. 2.)

HAB. Trunks of trees: Mount Wellington. (*Gunn*, 51 *b.*) (*Oldfield.*) On logs and upon the ground, Cheshunt, *Archer*.

Allied to *H. subsimplex*, C. Mueller, Musc. Syn. ii. 283, from Trinidad, and of the same pale glossy hue.—*Leaves* less crowded, turned upwards. *Capsule* larger, pendulous. *Male flower* smaller.—From *H. leptorrhynchum* it differs in the wider and shorter leaves, which are not at all falcate, and are somewhat scariose.—PLATE CLXXVII. Fig. 2; 1, portion of branch, with perichætium and capsule; 2, capsule and operculum:—*all magnified.*

§ 7. *Foliis distiche imbricatis vel compressis, subenerviis.*

a. *Foliis piliferis.*

31. **Hypnum extenuatum** (Bridel, Bryol. Univ. ii. 484); dioicum, caule elongato rigidulo procumbente inordinate bipinnatimque ramoso, ramis nunc simplicibus nunc apice fasciculatis flagelliferis fragilibus, foliis patentibus ovato-lanceolatis piliformi-acuminatis enerviis, rameis superioribus appressis muticis angustioribus, perichætialibus erectis apice capillaceis integerrimis, seta longiuscula lævi, capsula ovata inclinata.

HAB. Barren specimens only, growing amongst *Dicranum pungens*. (*Lawrence.*) (*Gunn.*)

DISTRIB. Australia (solitary specimen with capsule, found amongst other species). New Zealand, *J. D. H.* (barren specimens only.)

After much investigation we conclude (C. Mueller contr.) that *H. extenuatum*, of Bridel, is distinct from our *H. crinitum*; or, if not, that Bridel's description is so erroneous as to render identification impossible. The Moss here assumed to be Bridel's species is larger than *H. contiguum*.—*Stem* creeping, 3 inches long or more, with short, erect branches, often fasciculate with numerous flagelliform branchlets. *Leaves* yellowish, somewhat glossy, more decidedly piliferous, but less so than in *H. crinitum*. *Seta* ¾ inch long, red.

32. **Hypnum crinitum** (Hook. fil. et Wils. Fl. N. Zeal. 114. t. 91. f. 4); dioicum, caule procumbente elongato inordinate pinnatimque ramoso, ramis remotis patentibus planiusculis subpinnatis acutis, foliis subcompressis erecto-patentibus concavis e basi oblongo-ovata obtusa longe piliferis subserrulatis enerviis, perichætialibus erectis piliferis, seta elongata lævi, capsula ovata cernua, operculo conico.—H. filiferum, *Taylor, MSS.*

HAB. On trunks of live trees, near springs, etc: Mount Wellington, *Lyall*. Yorktown and St. Patrick's River. (*Gunn*, 1589, 1669.) Back River Gully and Johnny's Creek. (*Oldfield*, 68, 99, 158.)

DISTRIB. New Zealand.

33. **Hypnum politum** (Hook. fil. et Wils. Fl. Antarct. 110. t. 154. f. 2; Lond. Journ. Bot. 1844, 553); dioicum, vage ramosum, ramis elongatis procumbentibus compressis, foliis distiche imbricatis lateralibus patentibus cæteris appressis omnibus oblongis compresso-carinatis subpiliferis integerrimis enerviis, seta longiuscula lævi, capsula oblonga horizontali, operculo conico-rostellato.—Phyllogonium callichroum, *Montagne, in Ann. Nat. Sc. Cent.* v. 2 (*non Bridel, Bryol. Univ.* ii. 673).

HAB. Damp ground, Johnny's Creek. (*Oldfield*, 94.) On rocks, with *Bartramia Halleriana*. (*Gunn*, 1631.) Mount Wellington, *Mossman*.

DISTRIB. New Zealand, Kerguelen's Land, Cape Horn, Chili.

Branches 1 inch long. *Leaves* bright-green, glossy, crowded, much compressed. *Seta* 1 inch. *Operculum* above half the length of the capsule. *Calyptra* dimidiate, coriaceous.

b. *Foliis muticis.*

34. **Hypnum denticulatum** (Linn. Sp. Pl. p. 1588); monoicum, caule prostrato parce ramoso, ramis latiuscule complanatis longiusculis subattenuatis, foliis laxe confertis e basi caviuscula asymmetrica late ovatis acuminulatis integerrimis margine inferne recurvis basi subbinerviis, capsula subcylindrica inclinata, operculo conico acuto.—*Hedw. Musc. Frond. t.* 31. Stereodon Donianus, *Mitten, in Journ. Linn. Soc. ined.*

Hab. Johnny's Creek. (*Oldfield*, 140.) (Scanty and imperfect specimen, growing amongst *Leptotheca Gaudichaudii.*) Cheshunt, *Archer.*

Distrib. Hermite Island, Cape Horn, Europe, North America.

Tribe XXIV. Rhizogoniaceæ.

Gen. LVI. RHIZOGONIUM, *Bridel.*

Peristomium Hypni. Calyptra subulata, dimidiata. *Capsula* inclinata, longipedunculata. *Operculum* plerumque rostratum.—Surculi *subsimplices, erecti, subcompressi, cæspitosi.* Fructus *basilaris.* Florescentia *dioica.* Folia *rigida, serrata, vel integerrima.*

1. **Rhizogonium distichum** (Bridel, Bryol. Univ. ii. 665); dioicum, foliis distichis ovato-oblongis apice grosse dentatis nervo crasso sub apicem evanido, capsula oblonga horizontali, operculo conico-rostellato.—R. Muelleri, *Hampe, in Plantæ Muelleraniæ in Linnæa! (ex Mitten).* Hypnum distichum, *Schwægr. Suppl. t.* 87.

Hab. On rocks, *Gunn.* On stones: Leiith's Creek, Cheshunt, *Archer.* Mount Wellington, *Mossman.*

Distrib. New Zealand.

2. **Rhizogonium Novæ-Hollandiæ** (Bridel, Bryol. Univ. ii. 664); dioicum, foliis distichis submarginatis oblongo-ovatis denticulatis nervo valido excurrente breviter cuspidatis, capsula oblonga horizontali, operculo rostrato.—Leskea Novæ-Hollandiæ, *Schwægr. Suppl. t.* 83.

Var. foliis secundis. (*Gunn.*)

Hab. On rotten trunks of trees, and near springs: Mount Wellington. Back of Hobarton, on banks and dead wood. East Coast, on trap rocks. (*Oldfield*, 95.) (*J. D. H.*, 1346.) On dead trees: Western Creek and West-end Rivulet, Cheshunt, *Archer.* Mount Wellington, *Mossman.*

Distrib. New Zealand, Australia, Lord Auckland's Islands.

More elegant than the last.—*Leaves* yellowish-green, pellucid, scariose, obscurely margined below. *Areolæ* larger, guttulate. *Capsule* pale-red, purplish at the mouth. *Seta* reddish, 1 inch long. *Operculum* nearly as long as the capsule. *Inner peristome* with short cilia. *Annulus* large.

3. **Rhizogonium bifarium** (Schimper, Bot. Zeit. 1844, p. 125); dioicum, surculo superne ramoso, foliis distichis distantibus patentibus ovato-lanceolatis concaviusculis submarginatis solidinerviis duplici serie spinuloso-serratis, capsula ovata horizontali, operculo conico-acuminato subrostellato.—Hypnum bifarium, *Hook. Musc. Exot. t.* 57. Isothecium bifarium, *Bridel, Bryol. Univ.* ii. 356.

Hab. On stones, in wet places. Gullies: Brown's River, Back River Gully. (*Oldfield*, 289, 326.)

Distrib. New Zealand.

Surculi slender, ¾ inch long, bearing fruit about midway, not at the base. *Branches* few, slender, curved to one side. *Rachis* zigzag. *Leaves* dull-green. *Seta* ½ inch, curved at the top. *Capsule* small, roundish.

4. **Rhizogonium spiniforme** (Hedw. Musc. Frond. t. 25); monoicum, foliis laxe imbricatis patentibus rigidis lineari-subulatis marginatis excurrentinerviis duplici serie spinoso-serratis, seta elongata basilari, capsula oblonga arcuata horizontali, operculo rostrato.—Hypnum spiniforme, *Linn. Sp. Pl.* 1587; *Bridel, Bryol. Univ.* ii. 557.

HAB. Hobarton (barren specimens only), on dead wood, *J. D. H.* Cheshunt, *Archer.* Mount Wellington, *Mossman.*

DISTRIB. New Zealand, Norfolk Island, Antarctic Islands, South America, West Indies, Florida, Mexico, Sandwich and Pacific Islands, East Indies, Philippine Islands, Java, Ceylon, and South Africa.

5. **Rhizogonium mnioides** (*Hypnum*, Bridel, Bryol. Univ. ii. 559); dioicum, foliis erecto-patentibus basi decurrentibus lanceolato-subulatis anguste marginatis duplici serie dentatis solidinerviis siccitate tortilibus, seta elongata subbasilari, capsula ovata subcernua, operculo rostrato.—Hypnum mnioides, *Hook. Musc. Exot. t.* 77. H. subbasilare, *Schwægr. Suppl. t.* 256.

Var. *β. contortum;* surculo graciliori, foliis brevioribus siccitate contortis margine involutis, perichætialibus longius lineari-acuminatis serratis.—R. Hookeri, *C. Mueller, et* R. Mossmanianum *ejusd., Bot. Zeit.* 1851, *p.* 547; *conf. Mitten, in Journ. Linn. Soc.*

Var. *γ. lutescens;* surculo humiliori, foliis confertis lanceolatis (nec basi dilatatis) siccitate parum crispatis, areolis majoribus.

HAB. Var. *β.* On stones and decayed wood, in damp woods: Mount Wellington, *Mossman.* Brown's River, Back River Gully. (*J. D. H.*) (*Oldfield,* 114, 326.) Var. *γ.* Western Mountains. (*Gunn,* 1612.)

DISTRIB. New Zealand, Antarctic Islands, Fuegia, South America.

Probably *Mnium Hookeri* (C. Mueller, Musc. Syn. ii. 555) belongs to our var. *β.*

6. **Rhizogonium subbasilare** (Schimper, Bot. Zeit. 1844, p. 125); monoicum, surculis erectis, foliis erecto-patentibus subsecundis (haud compressis) laxis lineari-lanceolatis pellucidis evanidinerviis laxe reticulatis margine (raro duplici serie) spinuloso-dentatis, seta elongata subbasilari, capsula subcylindrica horizontali, operculo conico.—Hypnum subbasilare, *Hook. Musc. Exot. t.* 10; *Fl. Antarct.* ii. 417. H. mnioides, *Schwægr. Suppl. t.* 257.

HAB. On dead wood, not uncommon. (*Gunn,* 44, 45 *b.*) Cheshunt, *Archer.*

DISTRIB. Cape Horn, Hermite Island.

Gen. LVII. HYMENODON, *Hook. fil. et Wils.*

Peristomium simplex; *dentes* 16, membranacei, æquidistantes, lineari-subulati, planiusculi, fugaces, apicibus cohærentes, membrana basilari angusta connexi. *Calyptra* dimidiata. *Capsula* suberecta. *Operculum* rostratum.—Florescentia *dioica.* Habitus *Rhizogonii.* Vita *arborea.* Folia *disticha imbricata, elliptica, plana, pilifera, papillosa;* areolis *subrotundis, minutis.*

1. **Hymenodon pilifer** (Hook. fil. et Wils. Fl. N. Zeal. 117. t. 92. f. 3); dioicus, surculis simplicibus, foliis laxe disticheque imbricatis patentibus elliptico-oblongis planis longe piliferis evanidinerviis papillosis margine crenulatis, perichætialibus lanceolato-acuminatis erectis, seta basilari elongata gracili, capsula inclinata ovali ore coarctata.—Hypnum Mougeotianum, *D'Urville?*

HAB. On trunks of Tree-ferns: Banks of Huon River, *J. D. H.* Cheshunt, *Archer.*

DISTRIB. New Zealand.

Tribe XXV. Hypopterygiæ.

Gen. LVIII. HYPOPTERYGIUM, *Bridel.*

Peristomium Hypni. Calyptra conico-subulata, coriacea, plerumque latere fissa. *Capsula* æqualis, longe pedunculata, cernua vel pendula. *Operculum* e basi convexa rostratum.—Caulis *repens.* Surculi *dendroidei, pinnatim ramosi, complanati.* Folia *tristicha, lateralia pterygoidea, obliqua, verticalia, dorsalia* (tegmina *dicta*) *minora aliterque conformata, subappressa.* Fructificatio *lateralis, axillaris.*

1. **Hypopterygium Smithianum** (Hook. fil. et Wils. Fl. N. Zeal. p. 118); dioicum, surculo bipinnatim ramoso inferne nudo, foliis distichis ovato-subrotundis acuminulatis concaviusculis deflexis marginatis evanidinerviis apice denticulatis, tegminibus subrotundis acuminulatis solidinerviis, perichætialibus lanceolato-acuminatis, capsula pendula, operculo rostrato.—H. Novæ-Zelandiæ, *C. Mueller, Bot. Zeit.* 1851, *p.* 562; *Mitten, in Journ. Linn. Soc. ined.* Hookeria rotulata, *Smith, in Linn. Trans.* ix. 279 (*non Hedw. Sp. Musc.*).

Var. foliis siccitate magis crispatis, tegminibus oblongis, seta graciliori apice evidentius arcuata. (*Lawrence.*)

Hab. Hobarton, etc. (*Gunn,* 49, 65.) Kangaroo Bottom, *J. D. H.* Gullies round Brown's River. (*Oldfield,* 60.) Top of Grass-tree Hill, South Port, *Stuart.* On living trees: Western Creek, and other rivulets; Cheshunt, *Archer.* (*Lyall,* 95.)

Distrib. New Zealand, Norfolk Island.

Gen. LIX. LOPIDIUM, *Hook. fil. et Wils.*

Peristomium duplex *Leskeæ; internum,* ciliis nullis. *Calyptra* conico-subulata. *Capsula* æqualis, inclinata vel cernua, annulata, brevipedunculata. *Operculum* rostratum.—Caulis *repens.* Surculi *subdendroidei, pinnatim ramosi;* fronde *elongata, erecta;* ramis *haud radiatis.* Folia *tristicha, oblonga, lateralia obliqua.* (Name from λοπις, *a scale.*)

1. **Lopidium pallens** (Hook. fil. et Wils. Fl. N. Zeal. p. 119); monoicum, surculo erecto bipinnatim ramoso inferne nudo, foliis bifariis verticalibus oblongo-ovatis acuminulatis marginatis apice denticulatis siccitate crispulis subtortilibus, tegminibus cordato-acuminatis, perichætialibus brevioribus, seta scaberula longiuscula gracili, capsula horizontali annulata, operculo rostrato, peristomii dentibus crebre trabeculatis.—Leskea concinna, *Schwægr. Suppl. t.* 269 (*non Hook.*). Hypopterygium Struthopteris, *Bridel; Mitten, in Journ. Linn. Soc. ined.*

Hab. On trunks of Tree-ferns: Huon River. South Port, *Stuart.* On dead timber and trunks of trees: by the Kermandie Rivulet, South Huon. Gullies near Brown's River, *Brown, Gunn,* 34, 1632, *J. D. H., Oldfield, etc.*

Distrib. New Zealand, South America, Chiloe.

Essentially distinguished from *L. concinna,* Hook. Musc. Exot. t. 34, by the inflorescence, and by the rough seta.

Gen. LX. CATHAROMNION, *Hook. fil. et Wils.*

Peristomium simplex, internum; *dentes* 16, lineari-lanceolati, carinati, membrana basilari brevi connexi. *Calyptra* conico-mitræformis, basi lacera. *Capsula* suberecta, oblonga. *Operculum* conico-subulatum.—Caulis *repens.* Surculi *dendroidei, superne pinnatim ramosi.* Folia *tristicha, subrotunda, ciliata.* Florescentia *dioica.* (Name from καθαρος, *neat.*)

1. **Catharomnion ciliatum** (Hook. fil. et Wils. Fl. N. Zeal. p. 119); dioicum, surculo pinnatim ramoso inferne nudo, foliis ovato-subrotundis bifariis longe ciliatis evanidinerviis, tegminibus multo minoribus ovato-lanceolatis acuminatis ciliatis, setulis intrafoliaceis aciculiformibus, seta breviuscula crassa, capsula oblonga suberecta, operculo rostrato.—Pterigynandrum ciliatum, *Hedw. Sp. Musc. t.* 17. Hypopterygium ciliatum, *Bridel, Bryol. Univ.* ii. 710.

Hab. Tasmania, *Gunn.*

Distrib. New Zealand.

Gen. LXI. CYATHOPHORUM, *P. Beauv.*

Peristomium duplex, *Hypni. Calyptra* mitræformis, parva. *Capsula* æqualis, annulata, brevissime pedunculata, pedunculo vaginula tumida cyathiformi inserto. *Operculum* convexo-acuminatum. *Florescentia* dioica; *antheridia* paraphysibus clavatis suffulta.—Caulis *repens.* Surculi *erecti, subsimplices, filicoidei.* Folia *tristicha, lateralia verticalia, patentia, obliqua, dorsalia seu tegmina minora, subrotunda, cauli appressa.* (Name from *κυαθος, a cup, φορεω, I bear;* in allusion to the vaginula.)

1. **Cyathophorum pennatum** (Bridel, Bryol. Univ. ii. 722); dioicum, surculis erectis complanatis, foliis distichis pterygoideis ovato-oblongis obliquis serratis nervo brevi, tegminibus subrotundis apiculatis, seta brevissima curvula, capsula ovali, operculo conico-acuminato.—Hookeria pennata, *Hook. Musc. Exot. t.* 163.

Var. *β. minus;* foliis distantibus acutis.

Hab. Mount Wellington, near Hobarton. (*Gunn,* 33.) (*J. D. H.*) (*Oldfield.*) Rivulets: Cheshunt, *Archer.* Var. *β.* Rivulet near Castle Forbes Bay. (*Oldfield,* 61.)—(*v. v.*)

Distrib. New Zealand, Lord Auckland's Islands.

Tribe XXVI. Racopilaceæ.

Gen. LXII. RACOPILUM, *P. Beauv.*

Peristomium duplex, *Hypni. Calyptra* conico-mitræformis, basi inflexa, pilosa, interdum dimidiata, fere nuda. *Capsula* inæqualis, curvata, cernua vel erecta, sulcata, pachyderma, annulata. *Operculum* rostratum.—Caulis *repens, vage subpinnatim ramosus.* Folia *plerumque dimorpha, lateralia subdisticha, patula, intermedia minora, diversiformia, omnia excurrentinervia, pilifera, minute et opace areolata, subrotunda, subpapillosa.*

1. **Racopilum australe** (Hook. fil. et Wils. Fl. N. Zeal. p. 121. t. 92. f. 7); dioicum, caule repente tomentoso radiculoso subpinnatim ramoso, foliis lateralibus distiche patulis siccitate subcrispatis oblongo-ovatis nervo pellucido longe excurrente cuspidatis apice serrulatis, intermediis paullo minoribus surrectis ovato-acuminatis, seta crassa breviuscula, capsula oblonga cernua arcuata sulcata basi strumulosa, operculo brevirostri, calyptra pilosa basi campanulata.—R. strumiferum, *C. Mueller, Bot. Zeit.* 1851, *p.* 563; *Mitten, in Journ. Linn. Soc. ined.*

Hab. Johnny's Creek. (*Oldfield,* 93, 147.) (Specimen imperfect.) Cheshunt, *Archer.*

Distrib. New Zealand.

2. **Racopilum cristatum** (Hook. fil. et Wils. Fl. N. Zeal. p. 121. t. 92. f. 5); monoicum ?, caule repente, foliis lateralibus distiche patulis siccitate conniventibus ovali-oblongis obtusiusculis apice serrulatis nervo concolore excurrente cuspidatis, intermediis cordato-acuminatis duplo minoribus, seta longiuscula

gracili, capsula arcuata sulcata, operculo brevirostri, calyptra subulata dimidiata parce pilosa, peristomii dentibus dorso scabris, fl. masc. nidulantibus.—R. tomentosum, *C. Mueller, Bot. Zeit.* 1851, *p.* 563? *fid. Mitten.*

HAB. St. Patrick's River. (*Gunn*, 1654.) Huon River, on the ground. (*Oldfield*, 53.) Kangaroo Bottom, *J. D. H.* Kermandie Rivulet, South Huon, on logs, stumps, etc. Woodburn, near Richmond, damp ground. Cheshunt, *Archer.*

DISTRIB. New Zealand.

Tribe XXVII. HOOKERIACEÆ.

Gen. LXIII. HOOKERIA, *Smith.*

Peristomium duplex; *externum*, dentes 16, lanceolato-subulati, acuminati, incurvi, intus trabeculati, dorso costis prominentibus plus minus distantibus biliratis; *internum*, membrana plicata in processus 16 carinatos, raro ciliis interpositis, fissa. *Calyptra* mitræformis. *Capsula* cernua, ovata, longius pedunculata.—Caulis *repens, vel prostratus, vage ramosus.* Rami *plerumque compressi.* Folia *imbricata vel complanata, lateralia obliquata, areolis majusculis, rhomboideis vel hexagonis.*

§ 1. SAULOMA.—*Calyptra nuda, basi inflexa, integerrima, demum lacera, nec fimbriata. Peristomii externi dentes dorso remotius lirati, interni processus carinati, ciliis nullis. Folia imbricata, subsecunda (haud compressa), immarginata, laxe rhomboideo-areolata.*

1. **Hookeria tenella** (Hook. fil. et Wils. Fl. N. Zeal. p. 122. t. 92. f. 8); dioica, caule humili vage ramoso, foliis confertis imbricatis suberectis secundis oblongo-ovatis acutiusculis margine reflexis enerviis laxe reticulatis pellucidis siccitate plicato-striatis, capsula subcernua ovata parva, operculo rostrato, calyptra nuda mitræformi.

HAB. St. Patrick's River. (*Gunn.*) Dead wood, dark shady places by the Kermandie Rivulet, South Huon. (*Oldfield*, 97.) Near springs: Mount Wellington. (*J. D. H.*) On logs: Cheshunt, and on rocks, Jackey's Plain Creek, near Cheshunt, *Archer.*

DISTRIB. New Zealand.

§ 2. MNIADELPHUS, C. Mueller.—*Calyptra conico-mitræformis, basi fimbriata. Peristomii interni cilia nulla. Folia plerumque marginata, uninervia, nervo evanido.*

* *Foliis marginatis.*

2. **Hookeria apiculata** (Hook. fil. et Wils. Fl. Antarct. t. 155. f. 6); dioica, foliis subrotundo-spathulatis apiculatis marginatis enerviis, seta scabriuscula, capsula cernua, calyptra pilosa basi fimbriata.

HAB. Circular Head. (*Gunn*, 1689.)

DISTRIB. New Zealand, Fuegia.

3. **Hookeria amblyophylla** (Hook. fil. et Wils. Fl. N. Zeal. p. 123. t. 93. f. 3); dioica, ramis tumidiusculis compressis, foliis confertis distiche imbricatis erecto-patentibus siccitate appressis obovatis obtusissimis marginatis integerrimis evanidinerviis, margine recurvis, perichætialibus obtusis, calyptra fimbriata.

HAB. Tasmania. (*Gunn*, 1612 *b.*)

DISTRIB. New Zealand.

4. **Hookeria sinuosa** (Hook. fil. et Wils.); dioica, ramis compressis, foliis obovatis obtusis marginatis evanidinerviis margine planis siccitate undulato-crispatis. (TAB. CLXXVII. Fig. 3.)

HAB. Arthur's Lakes. (*Gunn*, 1652.) Hobarton. (*Oldfield.*) (Specimens few and imperfect.)

DISTRIB. New Zealand. (*Dr. Sinclair.*)

Closely allied to *H. amblyophylla.*—*Leaves* yellowish, much crisped and undulated when dry, more crowded, of firmer texture; areolæ smaller, except at the base, near the nerve, where they are larger, lax, and pellucid; cartilaginous border wider. *Perichætial leaves* small, obtuse. *Seta* 1 inch, smooth, glossy, red, and strong. *Calyptra* densely fringed at the base, roughish at the apex.—PLATE CLXXVII. Fig. 3; 1, branch and leaf; 2, leaf; 3, male inflorescence:—*all magnified.*

5. **Hookeria pulchella** (Hook. fil. et Wils. Fl. Antarct. part 1. t. 62. f. 1); dioica, ramis subflaccidis compressiusculis, foliis confertis distiche imbricatis undulatis obovatis obtusis mucronulatis marginatis integerrimis seminerviis, perichætialibus obtusis, capsula inclinata apophysata, operculo rostrato, calyptra fimbriata apice glabra.

HAB. With *H. amblyophylla* and *Bartramia Halleriana.* (*Gunn*, 13.) (A few fragments only.) On rocks: rivulet near Cumming's Head, Western Mountains, *Archer.*

DISTRIB. New Zealand, Lord Auckland's Islands.

6. **Hookeria crispula** (Hook. fil. et Wils. Fl. N. Zeal. p. 122. t. 93. f. 2); dioica, ramis subcompressis, foliis laxe disticheque patentibus siccitate crispato-undulatis obovatis apiculatis marginatis integerrimis seminerviis opacis (areolis minimis subrotundis) inferne pellucide laxius areolatis, perichætialibus ovato-acuminatis, seta gracili, capsula operculo calyptraque ut in *H. rotundifolia.*—Mniadelphus crispulus, *Mitten, in Journ. Linn. Soc. ined.*

HAB. Leith's Creek, Cheshunt, *Archer.*

DISTRIB. New Zealand.

** *Foliis immarginatis.*

7. **Hookeria microcarpa** (*Hypnum*, Hedw. Sp. Musc. t. 59); dioica, caule vage ramoso, ramis complanatis, foliis distiche imbricatis obovatis obtusis integerrimis immarginatis evanidinerviis basi medio laxe pellucido-areolatis, perichætialibus minutis ovato-lanceolatis, seta breviuscula, capsula parva cernua vel erecta ovata, operculo rostellato, calyptra basi fimbriata.—Pterigophyllum microcarpon, *Brid. Bryol. Univ.* ii. 342.

HAB. Grass-tree Hill, in wet places, seldom in fruit. (*Gunn.*) (*Oldfield*, 327, 287.) Ovens Creek, and other rivulets, Cheshunt, *Archer.*

DISTRIB. New Zealand.

§ 3. PTERIGOPHYLLUM, Bridel.—*Calyptra basi haud fimbriata, plus minus laciniata. Peristomii externi dentes remoti lirati. Folia complanata, immarginata, laxe areolata, obtusa; nervo bifurco, medio evanido.*

8. **Hookeria nigella** (Hook. fil. et Wils. Fl. N. Zeal. p. 124. t. 93. f. 6); dioica, caule humil erecto-incurvo rigidulo subramoso, foliis remotiusculis complanatis lateralibus spathulatis basi angustatis dentatis seminerviis intermediis obovatis dentatis, perichætialibus rotundo-ovatis concavis, capsula subrotundo-ovata pendula, calyptra nuda.

HAB. Hobarton. (*J. D. H.*) South Port. (*Stuart.*) Back River Gully. (*Oldfield*, 31.) On rocks: in rivulets, Cheshunt, *Archer.*

DISTRIB. New Zealand.

Leaves lurid, shrinking when dry. *Seta* 1 inch long. *Capsule* subpyriform, with a rostrate operculum of nearly the same length. *Calyptra* subconical. *Teeth* of the peristome with two rather distant red dorsal ridges.

9. **Hookeria (Pterigophyllum) obscurum** (Mitten); caule bi-tripollicari latitudine cum foliis

fere trilineari parce ramoso, foliis distichaceo-compressis, lateralibus patentibus late elliptico-spathulatis angulo apicali obtuso basi angustatis intermediis patentibus dimidio brevioribus subtrapezoideis obtusis, iis cauli parallelis mediis dorsalibus et ventralibus erectis appressis late obovatis apice rotundatis, omnibus, foliorum, nervo ad medium brevi-furcato evanido, marginibus superioribus crenulato-serratis, cellulis partis superioris circiter $\frac{1}{900}$ unc. diametro metientibus."—*Mitten, in Journ. Linn. Soc. ined.* (TAB. CLXXVII. Fig. 4.)

HAB. Cheshunt, *Archer.*

Whole plant obscure, blackish-green. Allied to *P. denticulatum* and *P. nigellum*, but with its lateral leaves very much narrowed towards the base, and these, as well as the intermedial and medial, of a different form. The species of this genus, from the neglect in their descriptions of the very different forms of the leaves in the several series, are hardly intelligible. *Mitten, l. c.*—PLATE CLXXVII. Fig. 4; 1, portion of branch and leaves; 2, 3, and 4, leaves:—*all magnified.*

Gen. LXIV. DALTONIA, *Hook. et Tayl.*

Peristomium duplex, *Neckeroideum; externum*, dentes sedecim, angusti, subulati, trabeculati, humiditate reflexi; *internum*, cilia totidem similia, cum dentibus alternantia, membrana basilari fere carentia. *Capsula* erecta. *Operculum* conico-subulatum. *Calyptra* mitræformis, basi eleganter fimbriata. *Florescentia* monoica vel synoica.

1. **Daltonia pusilla** (Hook. fil. et Wils.); monoica, caule humili decumbente subsimplici, foliis remotiusculis patentibus plus minus secundis siccitate laxis subcrispis anguste lanceolatis acuminatis planiusculis inferne carinatis integerrimis marginatis evanidinerviis, seta brevi gracili apice scabriuscula, capsula inclinata elliptica basi attenuata leptoderma, peristomii dentibus ciliisque longissimis angustissimis papillatis. (TAB. CLXXVII. Fig. 5.)

HAB. Near springs, on Mount Wellington (very scanty specimen), growing on dead twigs, with *Hypnum aciculare.* (*Oldfield*, 67.)

About half the size of *D. splachnoides*, Hook. and Tayl.—*Stem* 2 lin. *Leaves* smaller, paler, and somewhat narrower; the *areolæ* rather smaller. *Seta* scarcely 2 lin. long, very slender. *Peristome* half as long as the capsule, or more, widely spreading and recurved when wet; *teeth* reddish-brown, distantly trabeculate. *Calyptra* fringed at the base.—Allied to *D. angustifolia*, Dz. and Molk., but that, as described, has a different peristome and larger capsule.—PLATE CLXXVII. Fig. 5; 1, branch and fruit; 2, leaf; 3, capsule; 4, calyptra:—*all magnified.*

NAT. ORD. VI. HEPATICÆ.

(*Auctore Gul. Mitten, A.L.S.*)

The Tasmanian *Hepaticæ*, of which 126 are here enumerated, present a few species which appear to be peculiar to the Island, the remainder being found in New Zealand and Fuegia. One-third of the species included in the Flora of New Zealand have not yet been found in Tasmania; of these some, as *Plagiochila Stephensoniana, P. Arbuscula, P. gigantea*, and *Madotheca Stangeri*, are so large that they would scarcely have been overlooked if they were so generally distributed in Tasmania as they appear to be in the islands of New Zealand. The larger species of *Lejeunia* seem also to be absent, and *Riccia* has no representative. It can hardly be supposed that these are entirely wanting in Tasmania, but their absence from the collections yet received shows that if present they are rare. As in the Flora of New Zealand, there occur here also some species described by Dr. Taylor, of which nothing further is now known; his descriptions and remarks have therefore been inserted in their respective places in the arrangement, which is the same as that adopted in the 'Flora of New Zealand.'

Gen. I. JUNGERMANNIA, *Linn.*

1. **Jungermannia perigonialis** (Hook. fil. et Tayl. Fl. Antarct. p. 33. pl. 62. f. 7). (Tab. CLXXVIII. Fig. 1.)

Hab. Rocks near Cumming's Head, Western Mountains, *Archer.*

Perianthium tubulosum, elongatum, apice contracto plicato denticulato. *Folia involucralia* caulinis ambitu oblongis sinu acuto acute bidentatis fere conformia, margine dorsali integerrimis denticulo uno alterove instructis. *Amphigastrium* involucrale linguæforme, obtusum retusumve.

The figure before given of this small species represents only the male plant with perigonial leaves. It seems to differ from all the other small bidentate *Jungermanniæ* found in the Antarctic regions in its dark stems, which, as well as the brown leaves, are rather glossy. The *Jungermannia minuta* mentioned in Fl. Antarct. p. 40, is identical with *J. ochrophylla* of the same work.—Plate CLXXVIII. Fig. 1; 1, portion of the stem, with leaves and perianth; 2, leaf, removed from the stem; 3, involucral leaves and stipule:—*all magnified.*

2. **Jungermannia monodon** (Hook. fil. et Tayl. Lond. Journ. Bot. 1844, p. 559; Gottsche, Lindenberg, et Nees von Esenbeck, Synopsis Hepaticæ, p. 664; Mitten, in Fl. N. Zeal. pl. 94. f. 2).

Hab. Tasmania, *Spence, Gunn.*

3. **Jungermannia Tasmanica** (Hook. fil. et Tayl.); caule cæspitoso adscendente ramoso, foliis imbricatis patentibus oblongis margine utroque recurvo integerrimo, perianthio terminali oblongo tumido obtuso subincurvo sursum obtuse quadriplicato, ore minute denticulato, foliis involucralibus binis digitato-laciniatis perianthio adpressis.—J. revolvens, *Hook. fil. et Tayl. Lond. Journ. Bot.* 1846, *p.* 275. J. Tasmanica, *eorund. l. c. p.* 274; *G. L. et N. Syn. Hep. pp.* 675 *et* 678. (Tab. CLXXVIII. Fig. 2.)

Hab. Amongst and creeping over a *Peltigera,* Circular Head, and with *Mastigobryum Novæ-Hollandiæ,* near Yorktown, *Gunn.* Brown's River Gully, *Oldfield.*

Fusco-viridis. *Caulis* pollicaris, vage ramosus, repens adscendensve. *Folia* ovato-oblonga, obtusa, interdum retusa, marginibus recurvis.

J. elongella, Taylor, which is probably the same as the East Indian *J. orbicularis,* appears to have no character whereby it can be distinguished from this species.—Plate CLXXVIII. Fig. 2; 1, portion of the stem, with leaves:—*magnified.*

4. **Jungermannia colorata** (L. et Ldbg.).

Hab. On a stunted *Fagus,* at an elevation of 2000 feet. St. Patrick's River, *Gunn.* On rocks: Goat Hills, New Norfolk; Grass-tree Hill, and Hospital Bay, South Huon, *Oldfield;* gathered also by Mr. Archer.

5. **Jungermannia marginata** (Mitten); caule erecto ramoso rigido, ramulis sæpe flagelliformi-attenuatis, foliis patentibus antice secundis ovalibus integerrimis apice obtusis rariusve retusis margine incrassato e stratis duabus cellularum composito, amphigastriis ovatis bifidis. (Tab. CLXXVIII. Fig. 3.)

Hab. Arthur's Lakes, *Gunn.* Brown's River Gully, *Oldfield.*

Sordide fusco-viridis vel nigrescens. *Caulis* bipollicaris et altior, flexuosus, ramis sæpe gracilibus flagelliformibus commixtis. *Incrassatio* foliorum margines quasi ab inflexione adglutioneque serierum duarum cellularum ut tertiam in margine extremo transverse imposita est. *Amphigastria* diametro cauli adæquantia.

A rigid species, with some resemblance to elongated states of *J. scalaris,* but larger and with more oval leaves. Its evidently margined leaves readily distinguish it from its allies.—Plate CLXXVIII. Fig. 3; 1, portion of the stem, with leaves and stipule; 2, transverse section of the margin of leaf:—*both magnified.*

6. **Jungermannia dentata** (Raddi; G. L. et N. Syn. Hep. p. 143).

Hab. On a charred tree: Asbestos Hills, near Yorktown, *Gunn.* On rotten timber: Grass-tree Hill; and on charred wood, in damp places, *J. D. H.* Common on the hills, New Norfolk, etc., *Oldfield, Archer.*

These specimens, in colour and habit, as well as in the circumstance of their growing upon charred wood, agree very nearly with that form of *J. divaricata* which was described by Dr. Taylor as *J. exiliflora.* When compared however with that species, they are readily distinguished by the leaves having a certain braided appearance; the margins of the leaves are everywhere recurved; at the base, on the outer side, they are sometimes spinuloso-papillose, but the small teeth of the edges, from their downward direction, often present the same appearance when the papillæ are absent. These different states are all found in European specimens. The *J. squarrosula,* Taylor, from Swan River, is synonymous with *J. divaricata.* *J. tubulata,* Crypt. Antarct. t. 157. f. 6, differs in no way from ordinary states of *J. bicuspidata.* *J. physocaula,* Crypt. Antarct. t. 156. f. 1, seems to be very nearly allied to *J. bicuspidata,* but is more rigid; it has however no resemblance to *J. concinnata.* *J. longiscypha,* Taylor, from Swan River, is not different from *J. setacea;* also *J. asperifolia,* Taylor, from Madeira, is a slender form of *J. dentata.*

7. **Jungermannia pulchella** (Hook. Musc. Exot. t. 94; G. L. et N. Syn. Hep. p. 120).

Hab. Tasmania, *Oldfield.*

Gen. II. PLAGIOCHILA, *Nees et Mont.*

1. **Plagiochila falcata** (Hook. Musc. Exot. t. 89; G. L. et N. Syn. Hep. p. 649).

Hab. Tasmania, *Gunn, Archer.* Dense tufts, on rocks: Goat Hills; and on rocks, in streams, Kermandie Rivulet, South Huon, *Oldfield.*

The stems of these specimens are 3 inches or more in height; the leaves erecto-patent and rather loosely disposed; in the lower parts of the stems they are quite entire, but as they approach towards the apex they become more and more denticulate.

2. **Plagiochila biserialis** (L. et Ldbg.; Lindenberg, Sp. Hep. p. 126. t. 26; G. L. et N. Syn. Hep. pp. 53 et 652).

Hab. Macquarrie River, *Hb. Taylor.* On an old stump of *Fagus Cunninghami,* at an elevation of 2000 feet, *Gunn.*

3. **Plagiochila pusilla** (Mont.; Lindenberg, Sp. Hepat. p. 164; G. L. et N. Syn. Hep. p. 53).

Hab. Tasmania, *Hb. Montagne, et Nees ab Esenbeck.*

4. **Plagiochila Magellanica** (Lindenberg, Sp. Hep. Plagiochila, p. 164; G. L. et N. Syn. Hep. p. 53).—P. Lindenbergiana, *Lehm. in Linnæa,* iv. *p.* 367; *Pug. pl.* 3. *p.* 53; *G. L. et N. Syn. Hep. p.* 59. P. sphalera, *Hook. fil. et Tayl. Crypt. Antarct. p.* 121. *t.* 156. *f.* 8. P. unciformis, *eorund. l. c. p.* 119. *t.* 156. *f.* 5; *Syn. Hep. p.* 653.

Hab. Acheron River, *Gunn.*

The Tasmanian specimens of this species are larger than any of those collected at Cape Horn, and have all their leaves entire; in every other respect they correspond so nearly that they may be supposed to be an entire-leaved variety, similar to those observable in several allied species, as *P. falcata* and *P. retrospectans.* The inflexion of the dorsal margins of the leaves readily distinguishes *P. Magellanica* from its allies; the leaves themselves vary in being patulous or appressed, but their form is the same in all the plants described as above, and referred to this species.

5. **Plagiochila retrospectans** (Nees ab E.; Lindenberg, Sp. Hep. p. 123. t. 26; G. L. et N. Syn. Hep. p. 52 et 650).—Plagiochila ophisthotona, *Tayl. Lond. Journ. Bot.* 1844, *p.* 577; *G. L. et N. Syn. Hep. p.* 652.

Var. *β*; foliis integerrimis.

Hab. Var. *a*. Tasmania, *Gunn.* St. Patrick's River, 28th October, 1845, *Gunn.* Near Hobarton, *M. Hombron.* Brown's River Gully. Moist ground, springs: Mount Wellington, *J. D. H.* Dense tufts, on rocks, with *P. falcata*: Goat Hills, *Oldfield.* Var. *β*. With the first, from St. Patrick's River, *Gunn.* Cumming's Head, Western Mountains, *Archer.*

The description of Dr. Taylor's *P. ophisthotona* seems to correspond so well with the present species, that it may be easily supposed that it is but one of those instances in which Dr. Taylor imposed a name of his own on an already described species; but as no specimens so marked by him are in British herbaria, it is impossible to be certain if this reference is correct. The form distinguished as var. *β* differs in having its leaves everywhere entire; in every other respect they agree with those of the denticulate state. The areolation of the leaves is remarkably minute for the size of the plant.

6. **Plagiochila Lyallii** (Mitten, in Fl. N. Zeal. p. 132. pl. 96. f. 4).

Hab. St. Patrick's and Acheron Rivers, *Gunn.*

These specimens are a little larger than those from New Zealand, but have the same habit, and the leaves a little more directed towards the ventral side. The figure of the perianth in the plate above quoted represents it much too short; in another New Zealand specimen since received, the mature perianth coincides in shape with that of *P. incurvicolla*, represented in the same plate, fig. 2.

7. **Plagiochila fasciculata** (Ldbg. Sp. Hep. t. 1).—P. aculeata, *Tayl. Lond. Journ. Bot.* 1844, p. 578; *G. L. et N. Syn. Hep. p.* 627.

Hab. St. Patrick's River, 16th November, 1844, *Gunn.* South Huon, *Oldfield, Archer.*

The specimens marked *P. aculeata* by Dr. Taylor in Herb. Hooker, are precisely the common state of *P. fasciculata*, but amongst the specimens distributed under the name of *P. aculeata*, some have been found to belong to *P. Stephensoniana*, a species not yet received from Tasmania. *P. uncialis*, to which Dr. Taylor compared his *P. aculeata*, is a species belonging to the same group as *P. fasciculata* and *P. spinulosa*. In Crypt. Antarct. t. 156. f. 7, the leaves are represented with teeth on the dorsal margin, which does not appear to be commonly the case, however it might have been in the specimen from which the figure was drawn; the teeth too on the ventral side are represented too numerous.

8. **Plagiochila deltoidea** (Ldbg. Sp. Hep. Plagiochila, p. 132. t. 27; G. L. et N. Syn. Hep. p. 55).

Hab. Tasmania, *Labillardière.*

9. **Plagiochila strombifolia** (Taylor); caule repente, ramis adscendentibus vage ramosis, ramulis elongatis supremis fasciculatis, foliis imbricatis semiovatis convexis deflexis obtusiusculis breviter decurrentibus patulis, margine ventrali rotundatis apiceque parcius inæqualiter dentatis, dorsali rectis subinflexis integerrimis vel ad apicem denticulatis, fructu in dichotomia, perianthio ovato, ala nulla, ore dentato.—*G. L. et N. Syn. Hep. p.* 655. Jungermannia strombifolia, *Tayl. Lond. Journ. Bot.* 1844, *p.* 578. (Tab. CLXXVIII. Fig. 4.)

Hab. Tasmania, *J. D. H., Gunn, Oldfield.*

Sordide fusco-viridis. *Caulis* bi-quadriuncialis, dichotome ramosus. *Folia* patula, late ovata, obtusa, margine ventrali apiceque dentibus brevibus spinosis remotiusculis dorsali recurvo integerrimo, involucralia conformia dentibus numerosioribus validioribusque munita. *Perianthium* elongato-oblongum, ore compresso, labiis rotundatis subtruncatis dentatis. *Spicis* masculis elongatis, foliis saccatis imbricatis apice patentibus bidentatis.

Resembles *P. deltoidea* in appearance, but its leaves are less deltoid, and more of an ovate outline, and the teeth are more spinous; the perianth too is of a different form, and there is no dorsal wing.—Plate CLXXVIII.

Fig. 4; 1, a male, and 2, a female plant, of the *natural size;* 3, a portion of the stem, with leaf; 4, a perianth, removed from the stem; 5, a portion of the male spike, with perigonial leaves:—*all magnified.*

10. **Plagiochila Stuartiana** (Gottsche, Icon. Hepat. ined.); examphigastriata, ramis adscendentibus innovando-ramosis, foliis subheteromallis obovato-cordatis apice rotundo-obtusis margine dorsali subrecto integerrimo subreflexo vel apicem versus reflexo-involuto descendentibus sub apice et ventrali margine arcuato-dentatis, fructu . . , spica mascula e 7–9 paribus foliorum perigonialium subbidentulorum cætero-quin integerrimorum conflata.—*Gottsche, in Plantæ Muellerianæ.*

Hab. Tasmania, *Stuart.*

In systemate in vicinitate *P. ambiguæ*, Ldbg. et Hampe in Linnæa, t. 24. p. 640, ponenda.—*Gottsche.*

Gen. III. LEIOSCYPHUS, *Mitten.*

1. **Leioscyphus chiloscyphoideus** (Mitten).—Plagiochila chiloscyphoidea, *Lindenberg et Lehm. Pug.* viii. *p.* 4; *Montagne, in Voy. au Pôle Sud,* i. *p.* 267. Chiloscyphus amphibolius *et* C. retusatus, *Hook. fil. et Tayl. Flor. Antarct. p.* 441. Lophocolea multipenna, *eorund. l. c. p.* 43.

Hab. Amongst *Mastigobryum accretum:* St. Patrick's River, *Gunn.*

Chiloscyphus amphibolius, Nees ab E., gathered in Brazil by Dr. Von Martius, is a smaller species, and has leaves of a thinner texture than any of the specimens here referred to the *Plagiochila chiloscyphoidea* of Lindenberg, a plant which possesses all the characters attributed to *Leioscyphus*, having the habit of *Lophocolea* or *Chiloscyphus*, and the perianth of *Plagiochila.* Besides the three species which Dr. Taylor made of this plant, it composed part of his *Lophocolea pallide-virens*, probably all that part regarded by him as "(status minor) omnino fuscati," for the specimens are all of a brown colour, not observable in the *Lophocolea* itself. The bulk of the specimens of *Lophocolea multipenna* undoubtedly belong to the present species; but creeping over it in very small quantity is a perfectly distinct species of *Lophocolea*, which seems to have furnished part of the characters designating *L. multipenna*, particularly the triquetrous perianth; but the form of the leaves, "obovatis" and "ovato-oblonga," relates alone to a rather smaller than usual state of *Leioscyphus chiloscyphoideus*, and specimens exactly similar were gathered at Cape Horn. To this genus belongs *L. æquatus*, Flor. Antarct. p. 433. t. 158. f. 3, *L. strongylophyllus*, l. c. t. 62. f. 9, *L. reclinans*, l. c. t. 159. f. 1, of which the perfect perianth is nearly three times longer than broad, compressed, the mouth truncate and smooth; about half an imperfect perianth is represented in the figure 4. In *L. turgescens*, l. c. t. 64. f. 2, the perianth is compressed, the mouth wide, and the lips smooth; but it presents slight indications of being formed of three parts, namely the two uppermost leaves and amphigastrium, for there are often two notches in the mouth, just where the line of union must be supposed to be.

Gen. IV. LOPHOCOLEA, *Nees.*

1. **Lophocolea heterophylloides** (Nees ab E.; G. L. et N. Syn. Hep. p. 157).—L. subemarginata, *Hook. fil. et Tayl. Lond. Journ. Bot.* 1846, *p.* 367; *G. L. et N. Syn. Hep. p.* 696.

Hab. On logs under water, and on the earth and decayed wood: St. Patrick's River. Yorktown Rivulet, *Gunn.* Johnny's Creek, New Norfolk. Springs: Mount Wellington, *J. D. H.* Dense tufts, on stones: Back River Gully. Near the Derwent, Port Esperance, and Woodburn, near Richmond, *Oldfield.* Rivulets: Cheshunt, *Archer.*

2. **Lophocolea Gunniana** (Nees ab E.; G. L. et N. Syn. Hep. p. 169).

Hab. In tufts of grass: Hampshire Hills, *Gunn*, 1838, *Hb. Nees ab Esenbeck.* Also on logs under water, in St. Patrick's River, 26th November, 1844, *Gunn.*

This species is retained as distinct from the preceding, from the absence of decided intermediate specimens, but

there are not wanting some which seem to indicate that, like some of the forms of *L. Novæ-Zelandiæ*, the form of the stipule may be considerably modified, as well as the habit of the plants, by the situation in which they may have grown.

3. **Lophocolea austrigena** (Taylor).—Jungermannia austrigena, *Hook. fil. et Tayl. Flor. Antarct. p.* 125. *t.* 157. *f.* 7, *et t.* 158. *f.* 5; *G. L. et N. Syn. Hep. p.* 702.

HAB. Growing in water on the top of Fatigue Hill, elev. 4000 feet. A smaller form submersed: St. Patrick's River, *Gunn*. Wet places, in gullies, near Brown's River, *Oldfield*.

All the Tasmanian specimens of this plant are very much smaller than those from Hermite Island, but in other respects offer nothing to distinguish them. The species is an undoubted *Lophocolea*, and is closely allied to *L. palustris* (*Jungermannia palustris*, Hook. fil. et Tayl. Flor. Antarct. p. 431. t. 157. f. 8), and to *L. otophylla* (*Jungermannia otophylla*, Hook. fil. et Tayl. Flor. Antarct. p. 433. t. 158. f. 4), which has a trigonous, ovate-oblong perianth, the lips entire and undulate. Amongst the Antarctic species which have been erroneously referred to *Chiloscyphus* are *Lophocolea fuscovirens* (*Jungermannia*, Flor. Antarct. t. 440. f. 7), where the figure justly represents it as a *Lophocolea*, and *L. australis* (*Jungermannia*, Flor. Antarct. p. 156. t. 65. f. 3), but the perianth is falsely described and figured as bialate and bilabiate, its true form being prismatic, and of course trilabiate.

4. **Lophocolea Tasmanica** (Mitten); caule procumbente ramoso, foliis divaricatis explanatis subovatis apice sinu parvo subobliquo bidentatis cæterum integerrimis per paria cum amphigastrio parvo quadridentato coalitis involucralibus subellipticis recurvatione marginum integerrimarum vel rarius in margine dorsali unidenticulato, convexis apice bidentatis cum amphigastrio ovali breviter bidentato et utrinque unidenticulato connatis, perianthio prismatico angulis alatis, alis labliisque dentatis. (TAB. CLXXVIII. Fig. 5.)

HAB. On rotten wood, *Archer*.

Viridis. *Caulis* uncialis, prostratus, vage ramosus. *Folia* explanata, cellulis teneris pellucidis limitibus angustis.

Nearly allied to *L. connata*, Sw., and *L. Beecheyana*, Taylor. From the first it differs in the form of the leaf and emargination, the sinus being narrower, and the cells have thinner walls; from *L. Beecheyana*, as well as from *L. Martiana*, Nees, it recedes in the entire ventral margins of its involucral leaves.—PLATE CLXXVIII. Fig. 5; 1, a portion of the stem, with leaves and stipule; 2, a perianth, removed from the involucral leaves; 3, involucral leaves and stipule:—*all magnified*.

5. **Lophocolea lenta** (Hook. fil. et Tayl. Fl. Antarct. p. 154; Mitten, in Fl. N. Zeal. p. 136. t. 197. f. 2).—L. diademata, *eorund. Lond. Journ. Bot.* 1844, *p.* 560; *G. L. et N. Syn. Hep. p.* 692. L. secundifolia, *Hook. fil. et Tayl. l. c. p.* 438. *t.* 159. *f.* 2.

HAB. Near Hobarton, *J. D. H.*

6. **Lophocolea bidentata** (Nees; G. L. et N. Syn. Hep. p. 159).

HAB. Tasmania, *Stuart*. Banks of the Derwent. Springs: Mount Wellington. Deep Gully, Mount Wellington. High bleak hill, Major's Falls, New Norfolk. In brackish swamps near the sea: Northwest Bay, *Oldfield*. Cheshunt, *Archer*.

7. **Lophocolea amplectens** (Mitten); caule cæspitoso decumbente vage subpinnatim ramoso exili, foliis imbricatis subquadratis profunde emarginatis, laciniis acuminatis acutis amplectentibus, amphigastriis ovatis bifidis, segmentis extus unidentatis. (TAB. CLXXVIII. Fig. 7.)

HAB. Amongst rocks near the top of Mount Wellington, *Oldfield*.

Luteo-viridis, dein fuscescens. *Caulis* circiter semipollicaris, vage ramosus, rami persæpe foliis minoribus. *Folia* patentia, sinu lato emarginata, laciniis erectis subcomplicatis e cellulis parvis areolata. *Amphigastria* caulem latitudine parum superantia, ambitu ovata.

In size and habit very nearly resembling the European *Harpanthus scutatus*, Spruce (*J. scutata*, Hook.), but its leaves and stipules are of a different form, and were it not for the form of the stipule being exactly that which prevails in almost all the species of *Lophocolea*, it would rank nearer to some *Jungermanniæ*. Scraps of a species very similar, or perhaps even identical, have been picked from amongst Lichens from Cape Horn, the Falklands, and Campbell's Island.—PLATE CLXXVIII. Fig. 7; 1, a portion of the stem, with leaves and stipule:—*magnified*.

8. **Lophocolea decurva** (Mitten); caule procumbente subsimplici, foliis ovatis sinu parvo obtuso breviter bidentatis margine dorsali rectiusculo basi longe decurrente ventrali arcuato, amphigastriis late ovatis concavis marginibus inflexis ad tertiam partem, dentibus subulatis recurvis bidentatis. (TAB. CLXXVIII. Fig. 6.)

HAB. Amongst *Gottschea Lehmanniana*, Nees, and *Symphogyna flabellata*, N. et M. St. Patrick's River, *Gunn*.

Amœne viridis. *Caulis* pollicaris, gracilis. *Folia* imbricata, apice decurva. *Amphigastria* magna, concava.

A small plant, readily distinguishable by its concave stipules, which have their two slender teeth bent back. In general appearance it has more resemblance to some small forms of *Plagiochila Mauritiana*, Nees, than to any *Lophocolea*.—PLATE CLXXVIII. Fig. 6; 1, a portion of the stem, with leaves; 2, the stipule, as seen on the ventral side of the stem; 3, transverse section of the stipule, showing its incurved margins.

9. **Lophocolea Novæ-Zelandiæ** (Nees; G. L. et N. Syn. Hep. p. 168).

HAB. Near Hobarton, *J. D. H.*

10. **Lophocolea leucophylla** (Tayl.; G. L. et N. Syn. Hep. p. 155).

HAB. Tasmania, *Herb. Greville*. A few slender stems have been picked from amongst other *Hepaticæ* from the Acheron River, gathered by *Mr. Gunn*.

11. **Lophocolea muricata** (Nees ab E.; G. L. et N. Syn. Hep. pp. 169 et 703).—L. hirtifolia, *Hook. fil. et Tayl. Lond. Journ. Bot.* 1846, *p.* 366; *G. L. et N. Syn. Hep. p.* 703.

HAB. On *Sticta chloroleuca*, Hook. fil. et Tayl., *J. D. H.* On the old fronds of a Fern: St. Patrick's River, *Gunn*.

The geographical range of this little species appears to be very extensive. It is to be found throughout South America, including Panama, as well as in Java and in India.

Gen. V. CHILOSCYPHUS, *Corda*.

1. **Chiloscyphus conjugatus** (Mitten); caule repente elongato parce dichotome ramoso, foliis imbricatis oblongo-rotundatis perfoliatis margine dorsali remotiuscule spinuloso-dentato basi in marginem folii oppositi transverse abeunte margine ventrali integerrimo et basin versus sinu rotundo cum amphigastrio suborbiculato basi utrinque sinuato et ibidem dentibus paucis spinosis armato superne minute sparseque dentato coalito. (TAB. CLXXIX. Fig. 2.)

HAB. In a rivulet near the Acheron River, with *Gottschea ciliata*, *G. Lehmanniana*, and *G. pinnatifolia*, October 2nd, 1845, *Gunn*.

Fuscus. *Caulis* semipedalis, erectus adscendensve. *Folia* antice subconniventia, perfecte perfoliata, margine dorsali vel minute spinuloso-denticulato vel integerrimo. *Amphigastria* magna dimidiam folii adæquantes, superne margine parce denticulato incurvo caviuscula. *Textura* foliorum e cellulis minutis rotundatis intercalaribus distinctis.

Without exception the largest species of the genus. In external appearance and colour it resembles *C. Billardieri*, but the form of its leaves, and particularly that of the stipules, which resemble nothing so much in outline as the human occiput as seen from behind, render it very distinct from all allied species. The united dorsal margins

cross the stem transversely without the least tendency to decurrence. The apices of the leaves being a little incurved, and the leaves themselves subconnivent, give the plants a canaliculate appearance.—PLATE CLXXIX. Fig. 2; 1, a portion of the stem, with leaves and stipule:—*magnified.*

2. **Chiloscyphus Billardieri** (Nees ab E.; G. L. et N. Syn. Hep. pp. 175 et 704).

HAB. Tasmania, *Labillardière, Menzies.*

3. **Chiloscyphus Gunnianus** (Mitten); caule repente vage ramoso, foliis imbricatis perfoliatis subdeltoideis apice bispinosis margine dorsali spinoso-dentato in folium oppositum late transeunte margine ventrali bidentato basin versus valde arcuato in amphigastrium transverse oblongum apice breviter bidentatum lateribus extus circiter quadridentatis decurrente. (TAB. CLXXVIII. Fig. 8.)

HAB. Tasmania, *Gunn.*

Sordide pallide fusca. *Caulis* bipollicaris, flaccidus. *Folia* explanata, margine dorsali apicem basinque versus dentibus subulatis spinoso-dentato, medio sæpe læviusculo, apice ut plurimum bispinoso, rarius unispinoso, margine ventrali undulato, dentibus latioribus. *Amphigastria* transverse oblonga vel latissime cordata, sinu brevi rotundato breviter bidentata, lateribus utrinque medium versus breviter quadridentatis. *Textura* foliorum tenera, e cellulis parvis hexagonis intercalaribus nullis composita. *Spicæ* masculæ breves, foliis ovatis acutis dentatis concavis, inter folia amphigastriaque omnino latentia.

A remarkable species, possessing considerable resemblance to *C. Billardieri* in the general outline and dentation of its leaves, but its areolation is altogether different.—PLATE CLXXVIII. Fig. 8; 1, a portion of the stem, with leaves and stipule:—*magnified.*

4. **Chiloscyphus fissistipus** (Hook. fil. et Tayl. Flor. Antarct. p. 157).

HAB. Tasmania, *Labillardière.* St. Patrick's River, 28th October, 1845, and Circular Head, *Gunn.* Back River Gully, *Oldfield.* Tents Creek, *Archer.*

5. **Chiloscyphus cymbaliferus** (*Jungermannia,* Hook. fil. et Tayl. Flor. Antarct. p. 137. t. 64. f. 5; G. L. et N. Syn. Hep. p. 711).

HAB. Mount Wellington, *Mossman,* 780, *in part.*

6. **Chiloscyphus sinuosus** [Hook.] (G. L. et N. Syn. Hep. pp. 175 et 705).

HAB. Valleys near Hobarton, *J. D. H.* North-west Bay Gully, *Oldfield.*

7. **Chiloscyphus coalitus** [Hook.] (G. L. et N. Syn. Hep. pp. 180 et 706).

HAB. Tasmania, *Gunn, J. D. H.* Among other *Hepaticæ:* Back River Gully, Mount Wellington, *Oldfield.* West-end Rivulet, *Archer.*

The perianths of this species are small, campanulate, and with the laciniæ of the unequally dentate mouth incurved. The involucral leaves are minute and denticulate.

8. **Chiloscyphus laxus** (Mitten; Hook. fil. Fl. N. Zeal. p. 142. pl. 99. fig. 1).

HAB. Growing amongst *Symphogyna flabellata* and *Lepidozia tenax,* Gunn. With *Radula buccinata* and *Metzgeria furcata:* Back River Gully. North-west Bay Gully, *Oldfield.*

9. **Chiloscyphus tridentatus** (Mitten); caule procumbente elongato subsimplici, foliis patentibus brevi-oblongis subquadratisve distiche explanatis apice truncatis breviter tridentatis sinubus obtusis marginibus recurvis superficiem convexam formantibus statu sicco vel humido immutatis, amphigastriis parvis quadridentatis basi uno latere cum folio coalitis, perianthio juvenili in ramo brevissimo laterale campanulato?—C. combinatus, *Mitten, in Fl. N. Zeal. p.* 141; *G. L. et N. ex parte Syn. Hep. p.* 182. (TAB. CLXXIX. Fig. 1.)

HAB. Tasmania, *Dumont d'Urville, Archer.* Damp ground: Grass-tree Hill, *Oldfield.* St. Patrick's River, *Gunn.*

Pallide fusco viridis. *Caulis* subuncialis, parce radiculosus. *Folia* firma, convexa, apice ut plurimum subtruncata, breviter tridentata, rarius bidentata.

A small species, often not much longer than *C. echinellus*, with rarely branched stems, and leaves of a firm texture, not altered in form or direction by drying. The original specimens of *C. combinatus*, kindly lent by Nees von Esenbeck, are a rather larger species, with soft and flaccid leaves composed of more lax cells.—PLATE CLXXIX. Fig. 1; 1, a portion of the stem, with leaves and stipule:—*magnified.*

10. **Chiloscyphus echinellus** (Mitten, in Fl. N. Zeal. p. 141).—Lophocolea echinella, *G. L. et N. Syn. Hep. p.* 703.

HAB. Creeping amongst Mosses, *Archer.*

Gen. VI. PSILOCLADA, *Mitten.*

1. **Psiloclada clandestina** (Mitten, in Fl. N. Zeal. p. 143. pl. 99. f. 4).

HAB. Tasmania, *Gunn.*

Gen. VII. GYMNANTHE, *Tayl.*

1. **Gymnanthe saccata** (Tayl. Fl. Ant. p. 153; G. L. et N. Syn. Hep. pp. 193 et 712).—Jungermannia saccata, *Hook. Musc. Exot. t.* 16.

HAB. Ovens Creek, *Archer.*

2. **Gymnanthe tenella** (Hook. fil. et Tayl. Lond. Journ. Bot. 1844, p. 377; G. L. et N. Syn. Hep. pp. 192 et 712). (TAB. CLXXIX. Fig. 3.)

HAB. St. Patrick's River, *Gunn.* Springs: Mount Wellington, *Oldfield, Mossman.* Brown's River, *Oldfield.* Cheshunt, *Archer.*

It appears that, although Dr. Taylor first distinguished this from *G. saccata*, he had afterwards misgivings that it was but a state of the same species, for notwithstanding the great difference in appearance between the specimens of *G. tenella* in Herb. Greville, and the larger states of *G. saccata*, differences for the most part owing to the subbidentate leaves and empty cells in the original specimens, all those received from New Zealand and Tasmania, although having the leaves of the same form, have the cells more or less replete with colouring matter, and agree in colour and substance with those of *G. saccata*, there being in reality no difference between the two in the size of the cells. It is greatly to be desired that *G. saccata*, *G. tenella*, and *G. Urvilleana* should be carefully observed in their places of growth, for it appears by no means improbable that they are but different states of the same species. —PLATE CLXXIX. Fig. 3; 1, a portion of stem and leaves:—*magnified.*

3. **Gymnanthe Urvilleana** (Tayl. Lond. Journ. Bot. 1844, p. 468; G. L. et N. Syn. Hep. pp. 193 et 712; Fl. Antarct. pp. 153 et 435).—Scapania Urvilleana, *Mont. Voy. au Pôle Sud, t.* 16. *f.* 2. Plagiochila abbreviata, *Tayl.* (Jungermannia) *Lond. Journ. Bot.* 1844, *pp.* 374 *et* 377; *G. L. et N. Syn. Hep. p.* 646.

HAB. Tasmania, *Gunn, J. D. H., Archer.*

4. **Gymnanthe cinerascens** (Lehm. et Ldbg.; Mitten).—Jungermannia cinerascens, *Lehm. et Ldbg. in Pug. pl.* 4. *p.* 46; *G. L. et N. Syn. Hep. p.* 78. (TAB. CLXXIX. Fig. 4.)

HAB. St. Patrick's River, *Gunn.*

Although the perfect torus of this species is yet wanting, there are sufficient indications present in the specimens to warrant its being placed in this genus. The stipules, overlooked in the description of the plants in the 'Synopsis Hepaticarum,' are nevertheless present as well in the specimen kindly contributed by Dr. Lehmann as in

those gathered by Mr. Gunn, but they are not obvious on all the stems, and are thus easily overlooked. The involucral leaves scarcely differ in form from the cauline, but are concave, and enclose four or five pistils, seated on the dorsal side of the abrupt and slightly thickened apex of the stem itself; within the involucre there has been observed a small stipule-like leaflet, but not apparently representing the stipule, which, although present, has no part in the formation of the torus in the plants of this and allied genera.—PLATE CLXXIX. Fig. 4; 1, a portion of the stem, with leaves and stipule; 2, a stipule, removed from the stem; 3, apex of the stem, with leaves; 4, the same, with front leaves removed to show the dorsal position of the pistils :—*all magnified.*

5. **Gymnanthe diplophylla** (Mitten).—Jungermannia diplophylla, *Hook. fil. et Tayl. Lond. Journ. Bot.* 1844, *p.* 377; *Fl. Antarct. p.* 40. *pl.* 64. *f.* 4. Gottschea diplophylla, *Nees ab E.; G. L. et N. Syn. Hep. p.* 624. (TAB. CLXXIX. Fig. 5.)

HAB. Bogs: Brown's River; and wet ground: Kermandie Rivulet, *Oldfield.* Elliot Rivulet, *Archer.*

Caulis in plantis fertilibus brevis, semiuncialis. *Torus* ex apice caulis arcuati descendens, brevis, cylindricus, violaceus, radicellis parvis obtectus. *Folia* superiora magis lacero-dentata. *Amphigastria* superiora caulinis conformia, usque ad medium fere tori protractis, ulteriora violacea.

The fertile plants of this most curious species were gathered in New Zealand by Mr. Kerr, and thus is set at rest the before very doubtful place of the present and of *G. erinacea* (*Jungermannia*), Hook. fil. et Tayl. Fl. Antarct. pl. 161. f. 4. Indeed the whole appearance of the barren plants of both species is so different from that of *G. saccata*, that without fertile specimens their affinity with *Gymnanthe* could hardly have been expected. The torus appears to agree in all particulars with that of *G. saccata*, and on the under side, that is to say, on the side next to the stem, the amphigastria are continued, the lower one having the same violet colour as the torus itself.—PLATE CLXXIX. Fig. 5; 1, apex of the stem, with the leaves on the front side removed, showing the torus with the stipules on its inner side.

6. **Gymnanthe concinna** (Mitten); caule repente ramoso, foliis imbricatis oblongo-ovatis concavis apice rotundatis sursum conniventibus vel parum explanatis, involucralibus majoribus conformibus vel apice retusis, toro . . . (TAB. CLXXIX. Fig. 6.)

HAB. Tasmania, *Gunn*, creeping over *Jungermannia Tasmanica*, Tayl.

Pallide viridis. *Caulis* 3–8-linearis, hic illic radiculosus, apice fructifero descendente. *Folia* apicem versus sensim majora, involucralia convoluta. *Torus* juvenilis (apex caulis incrassatus) archegoniis 5–6 præditus.

A very small species, of a very neat habit, and with somewhat the look of the stems of some states of the European *Jungermannia nana*, Nees. The apex of the stem is slightly thickened, and curved downwards, and the involucral leaves being directed upwards at right angles, give the stems of this and some allied species an abrupt appearance. The areolation is similar to that of *G. Urvilleana.* A few stems of apparently the same species have been picked from a specimen of *Marchantia globosa*, Bischoff, from the Cape of Good Hope. *G. concinna* is closely allied to *G. lutescens*, from the East Indies, and *G. Bustillosii*, Mont., from Peru, but is easily distinguished by the characters above given.—PLATE CLXXIX. Fig. 6; 1, a portion of the stem, with leaf; 2, apex of the stem, with leaves; 3, the same, with the leaves removed from the front side to show the pistils :—*all magnified.*

7. **Gymnanthe Drummondii** (Mitten, in Fl. N. Zeal. p. 144. pl. 99. f. 8).

HAB. Bogs: Brown's River, *Oldfield.*

Gen. VIII. LEPIDOZIA, *G. L. et N.*

1. **Lepidozia microphylla** (Hook.; Ldbg. Sp. Hep. Lepidozia, p. 16. t. 2).—Jungermannia microphylla, *Hook. Musc. Exot. t.* 80.

HAB. Acheron River, *Gunn.*

2. **Lepidozia procera** (Mitten); caule erecto simpliciter pinnato, ramis breviusculis attenuatis decurvis, foliis minutis erecto-patentibus remotis ovato-quadratis quadrifidis, laciniis rectis acutis, amphigastriis minoribus subquadratis quadrifidis. (TAB. CLXXX. Fig. 1.)

HAB. Tasmania, *Gunn.* Mount Wellington, among *Plagiochila retrospectans* and *L. Ulothrix, Oldfield.*

Pallide fusca. *Caulis* semipedalis, gracilis, simplex. *Rami* graciles, attenuati. *Folia* remota, e cellulis parvis areolata.

Similar in appearance to some states of *L. microphylla*, but differing in the narrower outline of its stems (owing to the shortness of the branches), and the leaves are more deeply quadrifid with more acute laciniæ, which are not collected together at their apices, but stand out from each other.—PLATE CLXXX. Fig. 1; 1, a portion of the stem, with leaves; 2, a leaf, removed from the stem:—*all magnified.*

3. **Lepidozia quadrifida** (Ldbg.; idem et Gott. Sp. Hep. Lepidozia, p. 23. t. 4; G. L. et N. Syn. Hep. p. 203).

HAB. St. Patrick's River, *Gunn.*

4. **Lepidozia capilligera** (Schwægr.; Ldbg.; idem et Gott. Sp. Hep. Lepidozia, p. 25. t. 4; G. L. et N. Syn. Hep. p. 204).

HAB. Tasmania, *Labillardière* [Herb. Montagne]. The Falls, *Archer.* Castle Forbes Bay Rivulet, *Oldfield.* Mount Wellington, *Mossman,* 780 *in part.*

5. **Lepidozia prænitens** (Lehm. et Ldbg.; G. L. et N. Syn. Hep. p. 206; Ldbg. et G. Sp. Hep. Lepidozia, p. 33. t. 6).

HAB. Brown's River, *Oldfield.*

6. **Lepidozia Gottscheana** (Ldbg.; Mitten, in Fl. N. Zeal. p. 145).

HAB. Tasmania, *Labillardière,* amongst *Sarcomitrium cochleatum.* St. Patrick's River, *Gunn.* On dead wood: Grass-tree Hill, *Oldfield.*

7. **Lepidozia centipes** (Tayl.; Ldbg. et Gott. Sp. Hep. Lepidozia, p. 29. t. 5; G. L. et N. Syn. Hep. p. 204).

HAB. Tasmania, *Spence.* On damp ground: Kermandie Rivulet, South Huon, *Oldfield.*

8. **Lepidozia glaucophylla** (Tayl.); caule simplice procumbente bipinnato, ramis æqualibus vel capillari-attenuatis, foliis subcontiguis semiverticalibus late ovato-quadratis planiusculis integerrimis quadrifidis laciniis acuminatis, amphigastriis distantibus patulis ovato-quadratis ad medium usque quadrifidis integerrimis.—*Tayl. Lond. Journ. Bot.* 1844, *p.* 580; *Ldbg. et Gott. Sp. Hep. Lepidozia, p.* 39; *G. L. et N. Syn. Hep. p.* 207.

HAB. Tasmania, *Gunn.* Back River Gully, New Norfolk. Castle Forbes Rivulet, South Huon, *Oldfield.* Rivulet at Cheshunt, and amongst *Sphagna,* Western Mountains, *Archer.*

Pallide glauco-viridis. *Caulis* pollicaris bi-tripollicarisve. *Folia* remotiuscula, fere quadrata, divergentia; laciniis brevibus, acuminatis, e cellulis minutis areolatis, subopacis, subalbidis.

Readily distinguished from all allied species by its glaucous-white colour.

9. **Lepidozia lævifolia** (Tayl. Fl. Antarct. p. 157; G. L. et N. Syn. Hep. p. 208; Ldbg. et G. Sp. Hep. Lepidozia, p. 47. t. 7).

HAB. Back River Gully, with fruit, *Oldfield.* Cheshunt, *Archer.*

10. **Lepidozia cupressina** (Ldbg. Sp. Hep. Lepidozia, p. 42. t. 7; G. L. et N. Syn. Hep. p. 207).

HAB. Tasmania, *Dumont d'Urville,* Herb. Montagne et Nees.

11. **Lepidozia pendulina** (Ldbg.; idem et G. Sp. Hep. Lepidozia, p. 49. t. 7; Syn. Hep. p. 208).—Jungermannia pendulina, *Hook. Musc. Exot. t.* 60.

HAB. North-west Bay Gully and Castle Forbes Bay Rivulet, *Oldfield, Archer.*

12. **Lepidozia Ulothrix** (Ldbg. Sp. Hep. Lepidozia, p. 57. t. 10; G. L. et N. Syn. Hep. p. 210).—Lepidozia albula, *Hook. fil. et Tayl. Fl. Antarct. p.* 47. *pl.* 65. *f.* 6.

HAB. Tasmania, *Fraser.* North-west Bay Gully, and about springs, Mount Wellington, *Oldfield.* Ovens Creek, *Archer.*

13. **Lepidozia capillaris** (Swartz; G. L. et N. Syn. Hep. p. 212; Ldbg. et G. Sp. Hep. Lepidozia, p. 69. t. 6).

HAB. Bare ground, in bogs: Brown's River, *Oldfield.*

14. **Lepidozia tenax** (Greville; Ldbg. et G. Sp. Hep. Lepidozia, p. 63. t. 12; G. L. et N. Syn. Hep. p. 212).

HAB. With *Symphyogyna flabellata* and *Chiloscyphus laxus:* St. Patrick's River, *Gunn.* Brown's River, Castle Forbes Bay Rivulet, South Huon, *Oldfield.*

15. **Lepidozia Lindenbergii** (Gottsche; G. L. et N. Syn. Hep. p. 213; Ldbg. et G. Sp. Hep. p. 66. t. 11).

HAB. A few slender stems creeping amongst *Chiloscyphus conjugatus:* Acheron River, *Gunn.*

Gen. IX. MASTIGOBRYUM, *G. L. et N.*

1. **Mastigobryum Colensoanum** (Mitten, in Fl. N. Zeal. p. 147. pl. 100. f. 3).

HAB. Tasmania, *Oldfield.*

2. **Mastigobryum involutum** (Ldbg.; G. L. et N. Syn. Hep. pp. 220 et 717).—Herpetium involutum, *Mont. Voy. au Pôle Sud, t.* 18. *f.* 2.

HAB. Kangaroo Bottom, *J. D. H.* Goat Hills, *Oldfield.*

3. **Mastigobryum Novæ-Hollandiæ** (Nees; G. L. et N. Syn. Hep. pp. 221 et 717).

HAB. Var. *a.* Tasmania, *Fraser.* Var. *γ.* St. Patrick's River, and near Yorktown, *Gunn.* Dense tufts, on rotten wood: Goat Hills, New Norfolk; and springs: Mount Wellington. Brown's River Gully, *Oldfield.* Cheshunt, *Archer.*

4. **Mastigobryum monilinerve** (Nees; G. L. et N. Syn. Hep. p. 223).

HAB. With *Lophocolea echinella:* the Snugg, Huon, *Oldfield.*

M. echinatum, Gottsche; idem, Lindenberg, et Nees, Syn. Hep. p. 218. *Jungermannia dirhyncha*, Tayl., seems to have been recorded as from Tasmania by mistake, for the specimen in Herb. Greville is from the East Indies.

Gen. X. ISOTACHIS, *Mitten.*

1. **Isotachis subtrifida** (Mitten, Fl. N. Zeal. p. 149).—Jungermannia subtrifida, *Hook. fil. et Tayl. Lond. Journ. Bot.* 1844, *p.* 579; *G. L. et N. Syn. Hep. p.* 681. (TAB. CLXXIX. Fig. 7.)

HAB. Tasmania, *Lawrence.*

PLATE CLXXIX. Fig. 7; 1, portion of the stem, with leaves and stipule; 2, leaf, and 3, stipule, removed from the stem:—*all magnified.*

2. **Isotachis Gunniana** (Mitten); caule erecto prolifero-ramoso, foliis cordatis conduplicatis apice

marginatis marginibus uno binisve dentibus armatis, amphigastriis paulo majoribus conformibus, foliis involucralibus exterioribus latioribus interioribus minutis, perianthio cylindrico rugoso apice contracto diaphano. (TAB. CLXXIX. Fig. 8.)

HAB. Arthur's Lakes, *Gunn, Archer.*

Fusca. *Caulis* cæspitosus, uncialis biuncialisve, erectus. *Folia* divaricata, subverticalia, involucralia caulinis similia, interiora minuta et perianthio adpressa. *Perianthium* cylindricum, crassum, rugosum, apice albidum, diaphanum, minute plicatum.

Very nearly allied to *I. madida* in size, colour, and habit, but with wider and less deeply notched leaves, which are also more distant and divaricate. The perianth, like that of *I. Lyellii* and *I. madida*, is remarkably thick and fleshy; in the last-named species it is composed of five strata of cells, the roughness on its exterior surface appears to be caused by the partial breaking up of the external wall of cells, and resembles that of the calyptræ of the *Sarcomitria*.—PLATE CLXXIX. Fig. 8; 1, a portion of the stem, with leaves and stipule; 2, a leaf, and 3, a stipule, removed from the stem; 4, the perianth, removed from the involucral leaves; 5, the involucral leaves and stipule, showing the smaller internal leaves:—*all magnified.*

3. **Isotachis intortifolia** (Mitten).—Jungermannia intortifolia, *Hook. fil. et Tayl. Crypt. Antarct. p.* 38. *pl.* 64. *f.* 1.

HAB. On rocks: Rivulet near Cumming's Head, Western Mountains, *Archer.*

Gen. XI. SCAPANIA, *Ldbg.*

1. **Scapania obtusifolia** (Mitten).—Jungermannia obtusifolia, *Hook. Brit. Jung. t.* 26; *G. L. et N. Syn. Hep. p.* 76. J. domestica, *Gottsche, Plantæ Muellerianæ.*

HAB. Rivulet near Cumming's Head, Western Mountains, *Archer.* Grass-tree Hill, *Oldfield.*

These specimens appear to agree in every respect with British examples; and although Dr. Gottsche has recently, from the Australian specimens gathered by Dr. F. Mueller, described it as a distinct species, yet the sum of the characters he has given amount only to this,—that the stems are a little longer, and the perianth a little shorter, than in European specimens of *Jungermannia obtusifolia*, with which he admits that it otherwise agrees: the Tasmanian specimens, evidently the same species as those from Australia, have not that appearance presented by Dr. Mueller's, from his having grown in a compact tuft. A careful examination of the insertion of the leaves of this species, as well as of those of *Jungermannia albicans*, has confirmed the fact, already suspected from the substance of the leaves themselves, that they belong to that section of the leafy *Hepaticæ* whose leaves are inserted with the dorsal angle nearest towards the apex of the stems,—incubous,—in this particular they are at once removed from *Jungermannia*, and agree with *Scapania*, excepting that the perianth is not appressed, but contracted at the mouth, contrary to the characters ascribed to *Scapania;* nevertheless precisely the same kind of perianth is sometimes produced by *S. undulata*, but whatever variations may take place in the form of the perianth, *Scapania*, with the additions here proposed, forms a most natural genus, whose place must be near to *Gottschea.*

2. **Scapania densifolia** (Nees ab E.; G. L. et N. Syn. Hep. p. 72).—S. vertebralis, *Tayl.; G. L. et N. l. c. pp.* 72 *et* 663. Jungermannia densifolia, *Hook. Musc. Exot. t.* 36.

HAB. Tasmania, *Gunn.*

There appears to be no difference, excepting the paler colour, to distinguish *S. vertebralis* from the present, and the perianth is, as in other species of the genus, flattened, and at the apex truncate.

Gen. XII. GOTTSCHEA, *Nees ab E.*

1. **Gottschea pinnatifolia** [Hook.] (Nees; Syn. Hep. pp. 22 et 625).

HAB. In a rivulet near the Acheron River, with *Chiloscyphus conjugatus, Gunn.*

The leaves of the Tasmanian specimens of this species are scarcely at all sinuato-pinnatifid, but in other respects agree with those from New Zealand.

2. **Gottschea ciliata** (Mitten; Fl. N. Zeal. p. 151. pl. 101. f. 4).

HAB. In the same locality, and with the preceding species, *Gunn.*

3. **Gottschea Lehmanniana** (Ldbg. in Lehm. Pug. iv. p. 60; G. L. et N. Syn. Hep. pp. 20 et 623).

HAB. Dense forest near Franklin River. Near the Acheron River, and in a rivulet near the same, with the preceding species, *Gunn.* Back River Gully and elsewhere, common, *Oldfield.* Cheshunt, *Archer.*

Gen. XIII. POLYOTUS, *Gottsche.*

1. **Polyotus claviger** (Hook.; Gottsche; Fl. N. Zeal. p. 152).

HAB. Var. γ. *Taylori.* St. Patrick's River, *Gunn.*

2. **Polyotus brachycladus** (Tayl.; Gottsche; G. L. et N. Syn. Hep. p. 247). (TAB. CLXXX. Fig. 2.)

HAB. Tasmania, *Neill,* 1824, *Spence* (*Herb. Greville*).

PLATE CLXXX. Fig. 2; 1, a portion, with leaves and stipule, *magnified.*

3. **Polyotus Magellanicus** (Lamarck; Gottsche; G. L. et N. Syn. Hep. p. 248; Lamarck, Encyc. Bot. iii. p. 284; Hook. Musc. Exot. t. 115.

HAB. St. Patrick's River, in great profusion, and finely fruiting, *Gunn.* Mount Wellington and Kermandie River, South Huon, *Oldfield.* Cheshunt, *Archer.*

Gen. XIV. SENDTNERA, *Endlicher.*

1. **Sendtnera juniperina** (Sw.; Nees; G. L. et N. Syn. Hep. p. 230).

HAB. A few stems picked out of other *Hepaticæ,* gathered in Tasmania by *Mr. Gunn.* In bogs: summit of Mount Wellington, *Oldfield.*

These specimens, like those from New Zealand, correspond nearly with British states of the species, which differ so greatly in size from those found in tropical countries, and of which two, apparently mere forms, have been described by Dr. Taylor as distinct species, namely, *S. runcinata,* Tayl., which has its leaves more secund, and their margins more incurved, but otherwise presents no differences, and *S. pensilis,* Tayl. which seems to owe all its peculiarities to having grown in water. Both these states were gathered on the Andes, near Quito, by Professor Jameson.

2. **Sendtnera scolopendra** (Hook.; Nees; G. L. et N. Syn. Hep. pp. 241 et 723; Hook. Musc. Exot. t. 40).

HAB. Summit of Mount Wellington, *Oldfield.*

3. **Sendtnera flagellifera** (Hook.; Nees; G. L. et N. Syn. Hep. p. 242; Hook. Musc. Exot. t. 59).

HAB. Tasmania, *Gunn.*

Gen. XV. TRICHOCOLEA, *Dumort.*

1. **Trichocolea tomentella** (Ehrh.; Nees).

Var. γ. *Javanica,* G. L. et N. Syn. Hep. p. 237.

HAB. Forest near Macquarrie Harbour, *Gunn.* Port Arthur, *Oldfield.*

Gen. XVI. RADULA, *Nees ab E.*

1. **Radula buccinifera** (Hook. fil. et Tayl. Fl. N. Zeal. p. 154; G. L. et N. Syn. Hep. p. 261).

HAB. St. Patrick's River, *Gunn.* On rocks: Back River Creek and Brown's River, *Oldfield.* Rivulet at Cheshunt, *Archer.* Tasmania, *Stuart.*

2. **Radula aneurismalis** (Hook. fil. et Tayl.); caule exili implexo vage ramoso, ramis brevibus patentibus subsecundis tenuissimis, foliis laxis erecto-patentibus rotundatis exterius subangulatis concavissimis integerrimis lobo inferiori basi tumido incurvo apice recurvo adpresso angulato, perigoniis majoribus oblongo-lanceolatis spicatis apice proliferis.—*Lond. Journ. Bot.* 1845, *p.* 86; *G. L. et N. Syn. Hep. p.* 262.

HAB. On *Metzgeria furcata:* Tasmania, *J. D. H.*

"Creeping, scattered, pale olive-brown. *Stems* scarcely half an inch long; *branches* very slender, their leaves minute. *Leaves* cup-shaped, with an obtuse angle at the point most distant from the stem. The *lobule* has a tumid base, whilst its top lies flat on the inner part of the leaf, and has a single angle pointing outwards. The *perigonia* occur in the course of the shoots, and are remarkably long and large in proportion to the size of the stems. The present is the minutest of the *Radulæ* yet observed, and is readily distinguished by its peculiar perigonia."—*Dr. Taylor.*

Not now present in British herbaria. It is just possible that it is the male plant of *R. Novæ-Hollandiæ.*

3. **Radula Novæ-Hollandiæ** (Hampe; G. L. et N. Syn. Hep. p. 254).

HAB. Tasmania, *Herb. Stuart, Gottsche* (*Plantæ Muellerianæ*).

4. **Radula physoloba** (Mont. in Voy. au Pôle Sud, Bot. Crypt. t. 17. f. 4).

HAB. Near Cumming's Head, Western Mountains, *Archer.*

Gen. XVII. LEJEUNIA, *Gottsche et Ldbg.*

1. **Lejeunia tumida** (Mitten; Fl. N. Zeal. p. 157. pl. 103. f. 3).

HAB. Tasmania, *Gunn.*

2. **Lejeunia rufescens** (Ldbg.; G. L. et N. Syn. Hep. p. 366).—L. implexicaulis, *Hook. fil. et Tayl. Fl. Antarct. p.* 165; *G. L. et N. Syn. Hep. p.* 376. L. Mimosa *et* L. albovirens, *Hook. fil. et Tayl. l. c. p.* 166. *t.* 66. *f.* 4; *G. L. et N. Syn. Hep. pp.* 377 *et* 387; *Fl. N. Zeal. p.* 158.

HAB. Creeping over *Hypnum extenuatum,* Brid.: St. Patrick's River, *Gunn.* On rocks: north side of Cataract, Launceston, *Archer.*

3. **Lejeunia Gunniana** (Mitten); caule repente vage ramoso, foliis imbricatis oblongo-ovatis obtusis lobulo parvo saccato apice involuto minute bidentato, amphigastriis majusculis orbiculatis sinu acuto bidentatis, foliis involucralibus fere conformibus lobulo lanceolato acuto amphigastrio oblongo-obovato, perianthio oblongo parum retuso compresso acute pentagono, angulis superne cellulis tumentibus minute crenulatis. (TAB. CLXXX. Fig. 3.)

HAB. Tasmania, *Gunn.* Brown's River, *Oldfield.*

Sordide fusca. *Caulis* semipollicaris, repens, vage ramosus, cæspitosus. *Folia* patentia, apicibus incurvis e cellulis magnis pellucidis interstitiis crassiusculis areolata. *Amphigastria* dimidium folii fere adæquantia, cauli adpressa, sinu dentibusque acutis. *Folia* involucralia aliquantulo obtusiora. *Perianthium* terminale sed ab innovatione ex uno latere caulis sæpissime laterale.

A small species, chiefly remarkable for its lax areolation, and for the minutely crenulate upper edges of the carinæ of its perianths. In size it resembles *L. rufescens,* but is much more flaccid, and all the specimens are of a

dirty-brownish colour.—PLATE CLXXX. Fig. 3; 1, a portion of the stem, with leaves and stipule; 2, perianth, with involucral leaves and stipule, as seen from the ventral side; 3, transverse section of the upper part of the perianth:—*all magnified.*

4. **Lejeunia Tasmanica** (Gottsche, Icon. Hep. ined.); caule repente inordinate ramoso, foliis imbricatis ovatis obtusis integerrimis apice declivibus basi sinuato-complicatis, lobulo majusculo inflato apice emarginato-truncato, amphigastriis erectis distantibus contiguisve foliis triplo minoribus ovato-cordatis convexis ad medium fere bifidis, laciniis lanceolatis, fructu . . . —*Gottsche, Plantæ Muellerianæ.*

HAB. Tasmania, creeping amongst *Radula buccinata,* Stuart.

Forma intermedia inter *L. tabularem* et *L. serpyllifoliam,* priori tamen propinquior, sed statura minore, et amphigastriis foliorum respectu minoribus diversa.—*Gottsche, l. c.*

This appears to be nearly allied to *L. tumida,* and may even be identical with it.

5. **Lejeunia serpyllifolia** (Libert; G. L. et N. Syn. Hep. p. 374).

HAB. Cheshunt, on trees, *Archer.*

These specimens agree in all respects with European examples of the species, and possess the same property of staining the paper on which they are preserved of a dull-leaden colour.

6. **Lejeunia lyratifolia** (Hook. fil. et Tayl.); caule minuto tenui subdisperso procumbente vage ramoso, foliis laxis patentibus subquadratis angulo antico exteriore producto, lobulis oblongis involutis, amphigastriis (duplicatis) bipartitis, segmentis lanceolatis divaricatis, perianthio axillari ex angusta basi obovato quadricarinato.—*Lond. Journ. Bot.* 1846, *p.* 393; *G. L. et N. Syn. Hep. p.* 756. (TAB. CLXXX. Fig. 4.)

HAB. Tasmania, creeping over a specimen of *Parmelia diatrypa,* Ach., *J. D. H.*

Cæspites valde laxi, pallidissime fusco-olivacei. *Caules* vix trilineares, rami pauci, irregulares, folia lyræformia, margine exteriore recurva. *Perigonia* in spicis brevibus terminalibus. *Folia* involucralia dorso coalita, erecta, biloba, segmentis acutis inæqualibus, ventre cum amphigastrio involucrali oblongo bifido connato. *Perianthium* usque ad mediam longitudinem exsertum, carinis superne erosis.

A minute species, whose place is amongst those with a stipule at the base of every leaf, and generally with a few enlarged cells, giving their leaves a more or less regularly dotted appearance: these are not obvious in the present.—PLATE CLXXX. Fig. 4; 1, a portion of the stem, with leaves and stipules; 2, a perianth, with involucrum, as seen on the ventral side; 3, transverse section of the perianth:—*all magnified.*

Gen. XVIII. FRULLANIA, *Raddi.*

1. **Frullania Hampeana** (Nees ab E.; G. L. et N. Syn. Hep. p. 426).

HAB. Tasmania, *J. D. H.*

2. **Frullania proboscidophora** (Taylor); caule vage pinnatim ramoso, foliis rotundo-ovatis obtusis integerrimis auriculis lunato-galeatis acuminatis acumine decurvo, amphigastriis orbiculatis bidentatis dentibus acutis utrinque bi-tridentatis, foliis involucralibus ovatis acutis dentatis auriculo acuminato marginibus recurvis dentatis basi laciniatis, amphigastrio bipartito, laciniis lanceolatis dentatis, perianthio involucrum parum excedente obovato obtuso apiculato dorso convexo ventre unicarinato, angulis carinaque crispatulis.—*Tayl. Lond. Journ. Bot.* 1846, *p.* 402; *G. L. et N. Syn. Hep. p.* 770. (TAB. CLXXX. Fig. 5.)

HAB. On the bark of trees: Circular Head, *J. D. H.* Cheshunt, *Archer.*

Fusco-rubra, albescens, scariosa. *Caulis* pollicaris, folia lata e textura tenera fragili. *Auriculæ* lunato-galeatæ marginibus orificii incurvi ut rostrum simulant. *Amphigastria* circiter sexdentata. *Perianthium* fragilissimum, ante egressum capsulæ sæpe destructum.

Very nearly allied to *F. Hampeana*, but a larger species, remarkable in the few specimens yet seen for the discoloration and scarious appearance of its leaves. Its habit appears to resemble that of *F. dilatata*. The perianth is everywhere smooth except the angles, which are minutely undulate or subcrispate.—PLATE CLXXX. Fig. 5; 1, plant, of the *natural size;* 2, a portion of the stem, with leaves and stipule; 3, involucral leaves, stipule, and perianth, as seen on the ventral side; 4, transverse section of perianth:—*all magnified.*

3. **Frullania monocera** (Hook. fil. et Tayl. Lond. Journ. Bot. 1845, p. 89; G. L. et N. Syn. Hep. p. 418); caule implexo prostrato vage ramoso, foliis subimbricatis patentibus oblongo-ovatis rotundatis planis integerrimis, lobo inferiore galeæformi unispinoso deflexo, amphigastriis ovato-acuminatis bifidis dentatis, perianthio terminali obcordato trigono, angulis hirtis, ore tubifero.

HAB. Tasmania, amongst other *Hepaticæ, J. D. H.*

Cæspites parvi, albo-virides. *Caules* fere semipollicares, irregulariter ramosi. *Folia* arcte imbricata, patentia, tenuissima, plana, elliptica, auriculæ galeæformes cornu subreflexo munitæ. *Amphigastria* caulem excedentia. *Involucrum* in ramulo parvo perianthium fere obtegens; foliis involucralibus basi coadunatis, dentatis, erectis, lobulo lanceolato. *Anguli* perianthii spinis vario modo curvatis, interdum ad instar alæ confluentibus, muniti.—*Taylor, l. c.*

This description agrees, excepting the angles of the perianth, very nearly with the species here considered to be *F. proboscidophora.*

4. **Frullania clavata** (Hook. fil. et Tayl. Lond. Journ. Bot. 1845, p. 88; G. L. et N. Syn. Hep. p. 428); caule procumbente vage subpinnatimve ramoso, surculis apice incrassatis, foliis imbricatis patentibus rotundato-oblongis convexis integerrimis, lobo inferiore majore galeæformi acuminato decurvo, stipulis rotundatis emarginato-bidentatis subdenticulatis, calyce subimmerso obovato biplicato tubifero, foliis perichætialibus margine ventrali dentatis.

HAB. On *Nephroma cellulosa,* Ach.: Tasmania, *Herb. Taylor.*

"Scarcely one quarter of an inch long, pale-green, sometimes brownish-purple. *Stipules* large, their emargination shallow and rounded. *Auricles* large compared with the leaves. The *calyx,* rising little out of the perichætium, is widest near the mouth, below which it is rather suddenly contracted. The lateral *perichætial leaves* have, besides a segment corresponding to the auricle of the leaf, an inner one which is lanceolate and dentate.—Allied to *F. trinervis,* L. et L., but this is of a dark-brown colour, has a more exserted three-nerved calyx, the auricles are less acuminated, and the stipules more entire."—*Taylor. l. c.*

5. **Frullania reptans** (Mitten, in Fl. N. Zeal. p. 161. pl. 104. f. 4).

HAB. On very wet and rotten wood: Goat Hills, New Norfolk, *Oldfield.*

6. **Frullania falciloba** (Hook. fil. et Tayl. Lond. Journ. Bot. 1844, p. 581; G. L. et N. Syn. Hep. p. 423).

HAB. Tasmania, *Gunn.* Penquite, and moist rocky banks, Risdown, *J. D. H.* Dense mats on the sides of rocks: Johnny's Creek. Rocks by the seaside: South Port, Kermandie Rivulet, and Mount Wellington, *Oldfield.* Jackey's Plain Creek, *Archer;* gathered also by *Stuart.*

7. **Frullania deplanata** (Mitten, Fl. N. Zeal. p. 161. pl. 104. f. 3).

HAB. At the roots of trees: Brown's River Gully and Johnny's Creek, *Oldfield.* Cheshunt, *Archer.*

8. **Frullania Gaudichaudii** (Nees et Mont. in Ann. des Sc. Nat. 1836, p. 13, cum icone; G. L. et N. Syn. Hep. p. 435).

HAB. Tasmania, *Admiral d'Urville, in Herb. Montagne.*

9. **Frullania congesta** (Hook. fil. et Tayl. Fl. Antarct. p. 52; G. L. et N. Syn. Hep. p. 451).

HAB. On the bark of *Fagus:* St. Patrick's River, *Gunn.* On trees: Ovens Creek, *Archer.*

10. **Frullania megalocarpa** (Hook. fil. et Tayl.); caule sparso procumbente laxe bipinnato, ramis

gracillimis, foliis imbricatis patentibus oblongo-ovatis acutis recurvis integerrimis, auriculis clavato-oblongis cauli parallelis stylo subulæformi interjecto, amphigastriis minutis bifidis, perianthio majore ramulum terminante oblongo supra planiusculo ventre obtuse carinato, perigoniis rotundatis sessilibus.—*Lond. Journ. Bot.* 1846, *p.* 404; *G. L. et N. Syn. Hep. p.* 779.

HAB. Tasmania, on Mosses, *Herb. Greville.*

Minuta, laxa, fusca, dioica. *Caules* vix pollicares, surculi æquilati. *Perigonia* sicut perianthia ratione surculorum magna. Minor est et tenerior quam *F. exilis*, et stylo inter auriculam et caulem interposito bene distinguitur. —*Taylor.*

From the foregoing it appears that this species must be very nearly allied to *F. congesta*, and the only discrepancy is in the direction of the auricles, which Dr. Taylor says are parallel to the stem.

Gen. XIX. FOSSOMBRONIA, *Raddi.*

1. **Fossombronia pusilla** (Nees; G. L. et N. Syn. Hep. p. 597).

HAB. Damp ground: hillside, Woodburn, near Richmond; and wet crevices of rocks: gully by Brown's River, *Oldfield;* gathered also by *Mr. Archer.*

2. **Fossombronia intestinalis** (Taylor, Lond. Journ. Bot. 1846, p. 408; G. L. et N. Syn. Hep. pp. 469 et 785).

HAB. Cheshunt, *Archer.*

Gen. XX. ZOOPSIS, *Hook. fil. et Tayl.*

1. **Zoopsis argentea** (Hook. fil. et Tayl. Fl. Antarct. p. 167. t. 66. f. 6; G. L. et N. Syn. Hep. pp. 473 et 785).

HAB. The Bedchamber, New Norfolk, *Oldfield;* frequent, intermixed with Mosses and *Hepaticæ, Archer.*

Gen. XXI. PODOMITRIUM, *Mitten.*

1. **Podomitrium Phyllanthus** (Hook.; Mitten, in Fl. N. Zeal. p. 164).—Steetzia Phyllanthus, *Nees; G. L. et N. Syn. Hep. p.* 478.

HAB. St. Patrick's River, *Gunn.* Kermandie and Castle Forbes Rivulet, South Huon, *Oldfield.* West-end Rivulet, *Archer.*

Gen. XXII. STEETZIA, *Lehm.*

1. **Steetzia pisicolor** (Hook. fil. et Tayl. Crypt. Antarct. p. 138. pl. 160. f. 7).

HAB. Yorktown Rivulet and St. Patrick's River, *Gunn.*

The fructification of this very distinct species has not yet been seen, but the fronds agree with those of *Steetzia* or *Symphogyna.*

Gen. XXIII. SYMPHOGYNA, *Mont. et Nees.*

1. **Symphogyna flabellata** (Hook.; M. et N.; G. L. et N. Syn. Hep. p. 481).—Jungermannia flabellata, *Hook. Musc. Exot. t.* 13.

HAB. St. Patrick's River, *Gunn.* Back River Gully, *Oldfield*, 202, *Archer.*

2. **Symphogyna rhizobola** (Schwægr.; Nees ab E.; G. L. et N. Syn. Hep. p. 483).—Symphogyna obovata, *Hook. fil. et Tayl. Lond. Journ. Bot.* 1844, *p.* 581; *G. L. et N. Syn. Hep. p.* 480. Symphogyna pulchra, *Tayl. Lond. Journ. Bot.* 1846, *p.* 410; *G. L. et N. Syn. Hep. p.* 788.

HAB. Tasmania, *Gunn.* On the ground, in very wet places, in dense shade: St. Patrick's River. Back River Gully and Mount Wellington, *Oldfield.* West-end Rivulet, *Archer.*

The *S. obovata*, Hook. fil. et Tayl., corresponds with what is here understood as the fertile state of *S. rhizobola*, and, as might be expected, the attenuations at the apices of the divisions of the fronds are absent. The calyptra, although described by Dr. Taylor as ventral, is truly dorsal, as in all others of the genus. *S. pulchra*, Tayl., described with the margins of its fronds entire, has them certainly dentate; although the teeth are short and remote, it scarcely differs in appearance from the preceding. The specimens gathered by Dr. J. D. Hooker are finely in fruit, and the fertile stems are mixed with others corresponding in structure, but differing in habit, being prostrate, and rooting at the apices, like the plants figured in 'Musci Exotici.' The fertile stems are short and ascending, the divisions scarcely exceeding the third of an inch in length, and rounded at their apices, thus having an appearance, if seen separately from the creeping fronds, of being altogether a distinct plant.

3. **Symphogyna Lehmanniana** (Mont. et Nees; G. L. et N. Syn. Hep. p. 483).

HAB. Tasmania, *Archer.*

4. **Symphogyna rhodina** (Hook. fil. et Tayl.); fronde minuta oblonga dichotoma tenerrima pellucida costata margine dentata calyptraque lineari longissima rosea, capsula lineari-oblonga.—*Lond. Journ. Bot.* 1845, *p.* 93; *G. L. et N. Syn. Hep. p.* 487.

HAB. Tasmania, *Lyall.*

Frondes 2–3 lin. longæ, calyptra multo breviores. *Squamæ* involucrales circum basin calyptræ quadri-quinque-dentatæ, apice setaceæ, erectæ. *Capsula* sæpe uno latere rima dehiscens elateresque atque semina e rima emittens, revera in valvulas numeri indefiniti apice semper cohærentes divisa. *Color* totius plantæ est roseus.—*Taylor, l. c.*

Sufficiently different from any other Tasmanian species. From the description of the capsule it may be doubtful if it truly belongs to this genus.

Gen. XXIV. METZGERIA, *Raddi.*

1. **Metzgeria furcata** (Nees ab E.; G. L. et N. Syn. Hep. p. 502; Fl. Antarct. pp. 167 et 445; Fl. N. Zeal. p. 166).

HAB. Var. β. 1. *major:* St. Patrick's River, *Gunn.* Var. β. 2. *minor:* running over the surface of rocks, Launceston, *Gunn.* Var. ε. *prolifera:* Tasmania, *Gunn.* Back River Gully, *Oldfield.* Cheshunt, *Archer.*

Gen. XXV. SARCOMITRIUM, *Corda.*

1. **Sarcomitrium alternilobum** (Mitten, Fl. N. Zeal. p. 167).—Aneura alterniloba, *Hook. fil. et Tayl. Lond. Journ. Bot.* 1844, *p.* 527; *G. L. et N. Syn. Hep. p.* 496.

HAB. St. Patrick's River and Acheron River, *Gunn.* Clayey banks of the Kermandie Rivulet, North-west Bay Gully and elsewhere, on very wet banks, *Oldfield.*

2. **Sarcomitrium pingue** (Mitten).—Aneura pinguis, *Dumort.; G. L. et N. Syn. Hep. p.* 493. Jungermannia pinguis, *Linn. Sp. Pl. ed.* 2. ii. *p.* 1602.

HAB. Springs, Mount Wellington, and on muddy banks, *Oldfield.*

3. **Sarcomitrium cochleatum** (Mitten).—Riccia cochleata, *Hook. fil. et Tayl. Lond. Journ. Bot.* iv. *p.* 96; *Crypt. Antarct. p.* 56. *pl.* 66. *f.* 5.

Hab. The Falls, Cheshunt, *Archer*.

Calyptra cylindrica, carnosa, setulosa.

This species seems always recognizable by the pale, slightly thickened row of marginal cells.

4. **Sarcomitrium crassum** (Schwægr.; Mitten, in Fl. N. Zeal. p. 167).—Aneura crassa, *Nees; G. L. et N. Syn. Hep. p.* 500.

Hab. Acheron River and Arthur's Lakes, *Gunn*. Cheshunt, *Archer*.

5. **Sarcomitrium multifidum** (Mitten).—Aneura multifida, *Dumort.; G. L. et N. Syn. Hep. p.* 496. Jungermannia multifida, *Linn. ed.* 2. *p.* 1602.

Hab. St. Patrick's River, *Gunn*.

6. **Sarcomitrium pinnatifidum** (Mitten).—Aneura pinnatifida, *Nees; G. L. et N. Syn. Hep. p.* 495.

Hab. St. Patrick's River, and in a rivulet at an altitude of 6000 feet, Western Mountains, *Gunn*. Ovens Creek, *Archer*.

7. **Sarcomitrium palmatum** (Mitten).—Aneura palmata, *Nees; G. L. et N. Syn. Hep. p.* 498. Jungermannia palmata, *Hedw. Theor. Gen. ed.* 1. *t.* 18. *f.* 93–95.

Hab. Cheshunt, *Archer*.

8. **Sarcomitrium eriocaulum** (Mitten).—Metzgeria eriocaula, *G. L. et N. Syn. Hep. p.* 505. Jungermannia eriocaula, *Hook. Musc. Exot. t.* 72.

Hab. Back River Gully, *Oldfield*.

9. **Sarcomitrium alcicorne** (Mitten).—Aneura alcicornis, *Hook. fil. et Tayl. Lond. Journ. Bot.* iii. 479; *Fl. Antarct. p.* 139. *pl.* 160. *f.* 8.

Hab. On rocks, in slowly running streams: Mount Wellington and elsewhere, *Oldfield, Archer*.

Gen. XXVI. MARCHANTIA, *Linn.*

1. **Marchantia tabularis** (Nees ab E.).

Hab. Tasmania; very common in wet shady places, where there have been fires, but also frequent even on the tops of the hills, *Gunn, J. D. H.* Back River Gully, *Oldfield*. Hospital Bay, South Huon, *Oldfield*; elsewhere, *Archer*.

Marchantia polymorpha, Linn., is stated by Dr. Gottsche, in 'Plantæ Muellerianæ,' to occur in Tasmania, but all the specimens yet seen appear to belong to *M. tabularis*, Nees, which differs more in appearance than in any decided character from the European species.

2. **Marchantia pileata** (Mitten, in Fl. N. Zeal. p. 169).—Additur descriptio plantæ masculæ:—receptaculo masculo brevipedunculato orbiculato obtuse quadri-quinquelobo.

Hab. On the ground, with *M. tabularis*, *J. D. H.*, *Archer*.

Pedunculus bi-trilinearis, basi squamosus. *Receptaculum* latitudine bilineare, margine crenulatum.

The plant referred to this species corresponds so nearly in the size, colour, and areolation of its fronds, that there seems little reason to doubt its being the male of that already described in the 'Flora of New Zealand.'

3. **Marchantia foliacea** (Mitten, in Fl. N. Zeal. p. 168).

Hab. Tasmania, *Archer*.

Gen. XXVII. REBOULIA, *Nees ab E.*

1. **Reboulia hemisphærica** (Raddi; G. L. et N. Syn. Hep. p. 548).

HAB. Tasmania, *J. D. H.*

These specimens present no differences from the British states of the species, and, like them, have the fronds frequently constricted in an articulate manner.

Gen. XXVIII. FIMBRIARIA, *Nees ab E.*

1. **Fimbriaria Drummondii** (Tayl. Lond. Journ. Bot. 1846, p. 412; G. L. et N. Syn. Hep. pp. 566 et 791; Fl. N. Zeal. p. 169).

HAB. Tasmania, *Gunn.* Cheshunt, *Archer.* Brown's River, *Oldfield.*

2. **Fimbriaria australis** (Hook. fil. et Tayl. Lond. Journ. Bot. 1844, p. 573; G. L. et N. Syn. Hep. p. 561; Fl. N. Zeal. p. 170).

HAB. Brown's River, *Oldfield.*

3. **Fimbriaria tenera** (Mitten, in Fl. N. Zeal. p. 170).

HAB. Tasmania, *Archer.*

Gen. XXIX. TARGIONIA, *Micheli.*

1. **Targionia hypophylla** (Linn. Sp. Pl. ed. 2. ii. p. 1604).—T. Michelii, *Corda; G. L. et N. Syn. Hep. p.* 574).

HAB. Brown's River, *Oldfield.* Cheshunt, *Archer.*

Gen. XXX. ANTHOCEROS, *Micheli.*

1. **Anthoceros lævis** (Linn. Sp. Pl. ii. p. 1606; G. L. et N. Syn. Hep. p. 586; Fl. N. Zeal. p. 170).

HAB. Near Campbelltown, *Gunn.* In very wet places, under dripping water: Back River Gully, *Oldfield.* West-end Rivulet, *Archer.*

NAT. ORD. VII. FUNGI.

By the Rev. M. J. Berkeley.

The great characteristic of Tasmanian *Fungi,* of which 275 species are here enumerated, is their identity with or close relation to European forms. A very few only partake of a subtropical nature, while no considerable number of species exhibit any striking peculiarity. *Polyporus sanguineus* is almost wholly replaced by *P. cinnabarinus,* and though there are a few of those forms which are universal in the tropics, some of the most common species, as *Polyporus xanthopus,* are altogether wanting. A few are common to Tasmania, with Chili, but very few of the peculiar species of New Zealand occur. The Agarics are numerous. I have several species which I could not insert, from possessing only imperfect specimens. The three genera which abound most in species are *Agaricus, Polyporus,* and *Peziza.* About 8 species only can be considered as peculiarly Australian. The predominance of European forms will be seen from the following analysis; and of the extra-European forms about 11 only can be considered as at all tropical.

British species			113
European, which may be expected to occur in Great Britain			20
Tasmanian species of European type			95
Tasmanian species of extra-European type.			
	Subtropical	11	
	Chilian	6	39
	Antarctic and Tasmanian	22	
Subtropical			8
			275

About one-fourteenth only may be considered as subtropical forms, while nine-elevenths are European, whereas in the New Zealand *Fungi* we have subtropical forms in the proportion of 1 to 3.

Gen. I. AGARICUS, *L.*

Lamellæ membranaceæ, non deliquescentes, acie acuta, trama subfloccosa, cum hymenophoro infero concretæ.

The Tasmanian species of this large genus are extremely numerous, and, as Fries has remarked of those of Australia, in many cases identical with European forms. Almost every tribe has its representative. The common Mushroom and the nearly allied *A. arvensis* are abundant, but there are few, if any, other esculent varieties. (Name from *Agaria*, a region in Sarmatia.)

1. **Agaricus (Amanita) ananæceps** (Berk. in Hook. Lond. Journ. vii. p. 572).
Hab. On the ground: Penquite, March, *Gunn.*

2. **Agaricus (Amanita) grossus** (Berk.); albus, pileo crasso carnoso plano-hemisphærico verrucoso quandoque areolato, stipite bulboso fibrilloso, volva adnata, lamellis latis adnatis rotundatis.
Hab. On the ground, *J. D. H.*

White. *Pileus* 4 inches across, hemispherical, slightly flattened, thick, fleshy, covered with large warts, sometimes areolate; margin incurved. *Stem* bulbous, 3 inches high, above an inch thick; *veil* none; *volva* adnate, sometimes obscure. *Gills* ¾ inch broad, rounded behind, adnate.—A very large, coarse species, to which I can point out no near ally, except possibly *A. excelsus.* The stem however is short in proportion to the size. It approaches in some respects such *Lepiotæ* as *A. Vittadini.* It seems to be hemispherical in every stage of growth. The rounded gills at once distinguish it from *A. ananæceps.*

3. **Agaricus (Lepiota) procerus** (Scop.; Fr. Epicrisis, p. 12).
Hab. On the ground: Penquite, *Gunn.*

One specimen is exactly *A. procerus*, Krombholz, fig. 10, with its smooth stem; another resembles *A. gracilentus*, Kromb.; and a third is very near *A. mastoideus.* All however formed apparently a single group.

4. **Agaricus (Lepiota) cristatus** (Fr. Ep. p. 15).
Hab. On the ground: Penquite, May, 1846, *Gunn.*

5. **Agaricus (Tricholoma) nudus** (Bull. t. 439).
Hab. On the ground: Penquite, May, 1846, *Gunn.*

6. **Agaricus (Clitocybe) inversus** (Scop.; Fr. Ep. p. 70).
Hab. On the ground: Penquite, May, 1846, *Gunn.*

7. **Agaricus (Clitocybe) schizophyllus** (Berk.); cæspitosus, connatus, pileo convexo, stipite cartilagineo-fibroso, basi spongioso-tomentoso, lamellis decurrentibus demum margine fissis.

HAB. On charred wood, *Archer.*

Cæspitose, connate. *Pileus* 1 inch or more across, convex. *Stem* 2 inches high, 2 lines thick, stringy, with a thin cartilagino-fibrous coat, adhering by spongy down to the matrix. *Gills* decurrent, at length split at the margin after the fashion of *Schizophyllum*. The *colour* of the whole, when dry, is tawny, approaching to rufous.—This very singular species may possibly some day constitute a new genus. I have however seen but a single group, consisting of three specimens. The gills are not split till the pileus is expanded. In the genus *Agaricus* it is nearest to *A. coffeatus* and its allies.

8. **Agaricus (Clitocybe) laccatus** (Scop.; Fr. Ep. p. 81).

HAB. On the ground, *Gunn, Archer.*

9. **Agaricus (Collybia) radicatus** (Relh.; Fr. Ep. p. 81).

HAB. On dead wood, sunk in the ground: Penquite, May, 1846, abundant, *Gunn.*

10. **Agaricus (Collybia) morulus** (Berk.); rufo-purpureus, pileo convexo carnoso stipiteque æquali albo-farcto horizontali asperulis, lamellis planis latis adnatis distantibus. (TAB. CLXXXI. Fig. 1.)

HAB. On dead wood, *Archer.*

Dark mulberry-brown. *Pileus* 1 inch across, convex, fleshy. *Stem* horizontal, rough, like the pileus, with little downy points, stuffed. *Gills* plane, distant, adnate, of the same colour as the pileus.—A fine species, resembling *A. pæonius*, *A. carneus*, etc., but with distant, thicker gills. *A. carneus* is confessedly near to *Collybia*, though placed in *Tricholoma*.—PLATE CLXXXI. Fig. 1; *a a*, plant, *nat. size*; *b*, vertical section; *c*, portion of pileus:—*magnified*.

11. **Agaricus (Mycena) cohærens** (Alb. et Schw. p. 163).

HAB. On dead wood, *Archer.*

12. **Agaricus (Mycena) galericulatus** (Scop.; Fr. Ep. p. 106).

HAB. On dead wood, *Archer.*

13. **Agaricus (Mycena) atrocyaneus** (Batsch. fig. 87).

HAB. On dead wood, *Archer.*

14. **Agaricus (Mycena) interruptus** (Berk.); pileo crassiusculo plano depresso livido pelliculâ cartilagineâ tecto, stipite e basi orbiculari applanata striata oriundo, lamellis crenulatis albidis pilei carne gelatinoso-carnosa descendente interruptis. (TAB. CLXXXI. Fig. 2.)

HAB. On bark, *Archer.*

Pileus $1\frac{1}{2}$ line across, plane, depressed, livid in the centre, clothed with a cartilaginous pellicle; *flesh* subgelatinous, separated from the stem by a groove, and interrupting the pallid, crenate, subdecurrent gills. *Stem* ascending, $\frac{1}{4}$ inch high, $\frac{1}{2}$ a line thick, rising from a flattened orbicular disc, and at first sunk into it, and marking it with raised lines by means of the gills.—This singular species is allied to *Agaricus mucor*, but is separated by numerous characters. The dried specimens do not show the portion of the gill within the groove, which is very distinctly represented in Mr. Archer's drawing.—PLATE CLXXXI. Fig. 2; *a*, plant, *nat. size*; *b*, ditto, *magnified*; *c*, highly magnified section of the pileus, to show the interrupted gills.

15. **Agaricus (Mycena) capillaris** (Schum.; Fr. Ep. p. 119).

HAB. On Fern, chips, etc., *Archer.*

16. **Agaricus (Omphalia) Epichysium** (Pers. Ic. Pict. t. 13. f. 1).

HAB. On dead wood, *Archer.*

17. **Agaricus (Omphalia) carneo-rufulus** (Berk.); pileo plano subcarnoso striato lamellisque decurrentibus pallide rufis, stipite adscendente flexuoso farcto. (TAB. CLXXXI. Fig. 3.)

Hab. On dead wood, *Archer.*

Whole plant of a pale red-brown. *Pileus* ½ inch across, plane, subcarnose, striate. *Stem* 1 inch high, scarce a line thick, downy at the base, fibrillose. *Gills* arched, moderately broad and distant, but more numerous than in *A. umbelliferus*, decurrent, pale reddish-brown.—Plate CLXXXI. Fig. 3; *a*, plant, *nat. size; b*, vertical section, *magnified.*

18. **Agaricus (Omphalia) umbelliferus** (Linn.; Fr. Ep. p. 124).

Hab. On the ground, *Gunn, Archer.*

Mr. Archer's is a pallid form, with very decurrent gills. Gunn collected abundant specimens of a variety varying from primrose to orange, according to age. Other forms also seem to be abundant.

19. **Agaricus (Omphalia) flavo-croceus** (Berk.); pileo convexo umbilicato glabro stipiteque elongato inæquali solido flavis, lamellis latis postice decurrentibus croceis.

Hab. Under logs, *Archer.*

Pileus ½ inch across, convex, umbilicate, pale-yellow, glabrous; margin jagged. *Stem* 2 inches high, 1 line or more thick, unequal, stringy, dull saffron-yell w, downy at the base. *Gills* rather numerous, broad, abruptly decurrent, saffron-yellow; margin entire; interstices even.—The numerous gills separate this from the yellow variety of *A. umbelliferus*, while it has the colours but not the narrow gills of *A. chrysophyllus.*

20. **Agaricus (Omphalia) integrellus** (Pers. Ic. et Desc. t. 13. f. 1).

Hab. On dead wood, *Archer.*

21. **Agaricus (Pleurotus) tephrophanus** (Berk.); pileo excentrico infundibuliformi brunneo rivuloso pulverulento, stipite hirto e basi strigosa oriundo, lamellis latis postice emarginatis.

Hab. On charred wood, *Archer.*

Pileus 1 inch across, brown, minutely wrinkled and pulverulent, infundibuliform, thin. *Stem* brown, hispid, ¾ inch high, 1 line thick, springing from a strigose base. *Gills* few, broad, emarginate behind, transversely striate, pale.—This curious species approaches in many respects to *Paxillus atrotomentosus*, but the gills are of a different character.

22. **Agaricus (Pleurotus) phosphorus** (Berk. in Hook. Lond. Journ. Bot. vii. p. 572).

Hab. On roots of trees, Oct.–Feb., *Gunn.*

So phosphorescent that Mr. Gunn was able to read by its light, and it remained luminous six days or more.—A specimen, supposed to belong to this species, but possibly *A. salignus*, was found growing on *Acacia dealbata*, from the cavity in which the caterpillar of a *Cossus* had been nursed, and entirely filling up the shell of the pupa with its mycelium, so as at first sight to appear parasitic upon the insect.

23. **Agaricus (Pleurotus) palmatus** (Bull. t. 216).

Var. *sessilis.*

Hab. On dead wood, *Archer.*

This appears to be a sessile form of the plant of Bulliard. There is but a single specimen.

24. **Agaricus (Pleurotus) diversipes** (Berk.); pileo umbilicato l. laterali pelliculo gelatinoso vestito, stipite subcartilagineo compresso cavo elongato brevi l. obsoleto, lamellis distantibus decurrentibus, interstitiis lævibus. (Tab. CLXXXI. Fig. 4.)

Hab. On dead wood, *Archer.*

Pileus 1–2 inches across, central or lateral, umbilicate or depressed behind, covered with a gelatinous pellicle. *Stem* very variable, elongated and slender, short or obsolete, subcartilaginous, downy at the base, flat, hollow. *Gills* distant, entire, decurrent, interstices even.—Allied to *A. Tasmanicus*, but distinguished by various characters.—Plate CLXXXI. Fig. 4; *a*, plant, *nat. size; b*, vertical section.

25. **Agaricus (Pleurotus) Tasmanicus** (Berk.); pileo reniformi lævi glabro pellicula gelatinosa vestito, stipite brevissimo tomentoso l. obsoleto, lamellis latis subdistantibus tenuibus.

HAB. On dead wood, *Archer.*

Pileus 1 inch or more across, reniform, smooth, even, clothed with a thin gelatinous pellicle. *Stem* short, pure white, downy, sometimes quite obsolete. *Gills* broad, distant, crisped when dry, decurrent where the stem is unusually elongated.—This species does not appear to be resupinate in any stage of growth; still it is allied to *A. algidus*, which is constantly sessile.

26. **Agaricus (Pleurotus) bursæformis** (Berk.); pileo postice affixo bursæformi albido tomentoso antice glabrescente, lamellis subdecurrentibus striatis.

HAB. On dead bark, *Archer.*

Ochry-white. *Pileus* 2 inches across, fixed by a little white down, purse-shaped, densely tomentose behind, smooth in front; margin incurved. *Stem* short, nearly smooth. *Gills* crowded, moderately broad, slightly decurrent, marked with transverse streaks. *Spores* subglobose, $\frac{1}{4000}$ inch long, pale tan-coloured.—I know of no species with which this singular Agaric can be compared. The form and adherent pileus, accompanied by a short stem, etc., are very peculiar.

27. **Agaricus (Pleurotus) applicatus** (Batsch.; Fr. Ep. p. 137).

HAB. On bark and dead wood, *Archer.*

28. **Agaricus (Volvaria) parvulus** (Weinm. Ross. p. 238).

HAB. On decayed wood, *Archer.*

A variety with a cinereous pileus.

29. **Agaricus (Pluteus) cervinus** (Schæff. t. 10).

HAB. On decayed wood, May, 1846, *Gunn.*

A form with a pallid, fibrillose stem.

30. **Agaricus (Entoloma) panniculus** (Berk.); pileo tenui campanulato obtuso flocculoso stipiteque deorsum incrassato fibrilloso basi albo-tomentoso atro-violaceis, lamellis adnatis secedentibus. (TAB. CLXXXI. Fig. 5.)

HAB. Amongst Fern, March, 1856, *Archer.*

Pileus broadly campanulate, 1¼ inch across, obtuse, but not distinctly umbonate, thin except in the centre, dark-violet, flocculent. *Stem* of the same colour as the pileus, 2½ inches high, 1¼ line thick, fibrillose, thickened at the base, and clothed with cottony down. *Gills* moderately broad, scarcely ventricose, broadly adnate, but seceding. *Spores* oval, with several prominences, $\frac{1}{2000}$ inch long. *Smell* unpleasant.—This belongs to the Leptonoid group of *Entoloma*, resembling such species as *A. Lappula*, but without the slightest trace of an umbilicus.—PLATE CLXXXI. Fig. 5; *a*, plant, *nat. size; b*, section of pileus and stem; *c*, spores:—*highly magnified.*

31. **Agaricus (Nolanea) pascuus** (Pers. in Schæff. t. 229).

HAB. Amongst leaves, on the ground, *Archer.*

There is a single specimen also in the collection of a Rhodosporous Agaric, quite indeterminable, with similar spores, but adnexed gills.

32. **Agaricus (Pholiota) mutabilis** (Schæff. t. 9).

HAB. On dead wood, *Archer.*

33. **Agaricus (Naucoria) furfuraceus** (Pers. Syn. p. 454).

HAB. On the ground, *Gunn.*

34. **Agaricus (Galera) tener** (Schæff. t. 70).
HAB. On the ground, *Gunn.*

35. **Agaricus (Crepidotus) hepatochrous** (Berk. in Hook. Lond. Journ. Bot. vii. p. 574).
HAB. On bark, *Gunn.*

36. **Agaricus (Crepidotus) interceptus** (Berk.); reniformis, ochraceo-albus, pileo e tribus stratis medio albo inter duo obscuriora intercepto, stipite brevissimo laterali. (TAB. CLXXXI. Fig. 6.)
HAB. On dead bark, *Archer.*

Pileus 1 inch across, ochraceous, white, reniform, conchate, consisting of three strata, of which the intermediate one is white. *Stem* very short. *Gills* numerous, moderately broad, pale-ochraceous. *Spores* pale-ochraceous, subglobose, $\frac{1}{3500}$ inch long.—Allied to *A. mollis*, but the upper stratum is not gelatinous.—PLATE CLXXXI. Fig. 6; *a a*, plant, *nat. size; b b*, vertical section of ditto.

37. **Agaricus (Crepidotus) Auricula** (Berk.); pileo sessili carnoso postice adnato conchæformi, lamellis angustis pallidis confertis.
HAB. On dead wood, *Archer.*

Pileus 1 inch across, cream-coloured, conchiform, sessile, adnate behind. *Flesh* thick, brittle when dry; margin incurved. *Gills* narrow, pale. *Spores* lentiform, $\frac{1}{6000}$ inch long.—This species is remarkable for the thickness of its flesh, which is brittle when dry.

38. **Agaricus (Crepidotus) insidiosus** (Berk. in Hook. Lond. Journ. Bot. vii. p. 574).
HAB. On bark: Penquite, May, *Gunn.*

39. **Agaricus (Crepidotus) cassiæcolor** (Berk.); pileo resupinato postice affixo farinaceo lamellisque latiusculis cinnamomeis, stipite brevissimo candido tomentoso.
HAB. On dead bark, *Archer.* A larger form occurs on charred wood, approaching in size to *A. hepatochrous*, Berk., and there is also a smaller form on decorticated wood.

Pileus $\frac{1}{2}$–$\frac{3}{4}$ inch across, reniform, cinnamon-brown, farinaceous, at length fixed behind to the matrix, and resupinate. *Stem* very short and slender, white, tomentose. *Gills* moderately broad, cinnamon. *Spores* subcymbiform, hollowed out on one side, as is the case in most Agarics.—This species is closely allied to *A. hepatochrous*, which is a larger species, with a stout stem.

40. **Agaricus (Crepidotus) leptomorphus** (Berk.); sessilis, vertice byssoideo-affixus, pileo albido tomentoso, lamellis latiusculis umbrinis.
HAB. On dead wood, *Archer.*

Sessile, fixed at the vertex by a few delicate white threads, $\frac{1}{4}$ inch across, whitish, tomentose. *Gills* ventricose, umber, with a pale edge. *Spores* broadly elliptic, almost orbicular when seen from behind, $\frac{1}{4000}$ inch broad.—This is very nearly allied to *A. cassiæcolor*, but differs in colour, and is absolutely stemless.

41. **Agaricus (Psalliota) campestris** (L.; Fr. Ep. p. 213).
HAB. In pastures, *Gunn, J. D. H.*

42. **Agaricus (Psalliota) arvensis** (Schæff.; Fr. Ep. p. 213).
HAB. In pastures, *Gunn.*

43. **Agaricus (Psalliota) semiglobatus** (Batsch. f. 110).
HAB. On dung, *Gunn.*

44. **Agaricus (Hypholoma) fascicularis** (Hud.; Fr. Ep. p. 222).
HAB. On dead wood, *J. D. H., Gunn, Archer.*

45. **Agaricus (Hypholoma) dispersus** (Fr. Ep. p. 222).
HAB. On dead wood, *Archer*.

A small form, $\frac{1}{2}$ inch across.

46. **Agaricus (Psilocybe) spadiceus** (Schæff.; Fr. Ep. p. 225).
HAB. On dead wood, *Archer*.

47. **Agaricus (Psathyrella) disseminatus** (Pers. Syn. p. 403).
HAB. Amongst Moss, *Archer*.

Gen. II. COPRINUS, *P.*

Hymenophorum a stipite discretum. *Lamellæ* membranaceæ, primum stipato-cohærentes, dein diffluentes.

Distinguished from *Agaricus* by their deliquescent gills, and from *Bolbitius* principally by their habit, and black, not coloured spores. The species appear to be rare in Tasmania, though there is a trace, in the collections, of one or two besides the common *C. stercoreus*. (Name from κοπρος, *dung*.)

1. **Coprinus stercoreus** (Fr. Ep. p. 251).
HAB. On dung, *Archer*.

Gen. III. CORTINARIUS, *Fr.*

Hymenophorum cum stipite contiguum. *Lamellæ* membranaceæ, trama floccosa, pileo cohærentes, persistentes, decolorantes. *Velum* araneosum.

Distinguished from *Agaricus* by their peculiar habit and arachnoid veil. *Sporidia* cinnamon-red.—The European species are extremely numerous; one only appears to occur in Tasmania. (Name from *cortina*, a veil.)

1. **Cortinarius (Myxacium) Archeri** (Berk.); pileo convexo carnoso rivuloso brunneo-violaceo, stipite valido æquali viscoso violaceo, lamellis pallido-argillaceis latiusculis adnatis transversim rugosis.
HAB. On the ground: Cheshunt, April, 1856, *Archer*. (TAB. CLXXXI. Fig. 7.)

Pileus convex, fleshy, minutely rivulose, viscid, smooth, of a brownish violet. *Flesh* pallid, tinted near the gills with violet. *Stem* stout, equal, obtuse, 1 inch thick, viscid, violet, hollow above. *Veil* viscid. *Gills* moderately broad, adnate, subdecurrent, pale clay-coloured, slightly tinted with violet. *Spores* obliquely ovate, rather elongated, $\frac{1}{2300}$ inch long, and half as broad; sometimes however they are much longer.—This species is evidently closely allied to *C. elatus*, but the stout equal stem, thicker flesh, etc., distinguish it. The drawing exhibits merely the young unexpanded plant, and the single specimen is evidently that which was designed. In consequence of the upper part of the stem being hollow, the stem in the dried plant appears bulbous.—PLATE CLXXXI. Fig. 7; *a a*, plant, *nat. size*; *b*, vertical section; *c*, spores upon sporophora, *magnified*; *d*, spores, *more highly magnified*.

No certain specimen of the genus *Hygrophorus* appears in the collections, but there is a doubtful species, resembling *H. cossus*, and a drawing of a minute species with a solid stem, apparently allied to the small form of *H. miniatus*.

Gen. IV. LACTARIUS, *Fr.*

Trama vesiculosa. *Lamellæ* lactescentes.

A genus containing many species, distinguished from others, except *Russula*, by the vesiculose trama, and from that by the milky gills. The spores are often, but not always, globose and echinulate. The Tasmanian species appear to be rare. I have seen only one besides that described, but unfortunately indeterminable. (Name from *lac*, milk.)

1. **Lactarius stenophyllus** (Berk.); pileo infundibuliformi carnoso lutescenti-albido zonato, margine involuto, stipite farcto flexuoso, pileo concolore, lamellis angustissimis subincarnatis. (Tab. CLXXXI. Fig. 8.)

Hab. On the ground: Cheshunt, March, 1856, *Archer*.

Pileus 4 inches across, infundibuliform, dirty-white, tinged with yellow *Flesh* moderately thick, dirty-white; margin involute. *Stem* 1½ inch high, ½ inch thick, flexuous, rather uneven, smooth. *Gills* very narrow and crowded, pointed at the base, but scarcely decurrent, dirty-flesh-coloured. *Spores* ovate, smooth.—Unfortunately no specimens have been preserved of this species, which is clearly undescribed. The pellicle of the pileus is thick. It is allied apparently to *L. insulsus*. The gills are like those of *L. piperitus*.—Plate CLXXXI. Fig. 8; *a*, plant, *nat. size; b*, section of ditto; *c*, single spore:—*magnified*.

Gen. V. RUSSULA, *Fr.*

Trama vesiculosa. *Lamellæ* exsuccæ.

A large genus, distinguished from *Lactarius* by the gills being destitute of milk. One species only has been found in Tasmania, of which however I have seen no specimens. (Name from *russulus*, reddish; in consequence of red being a frequent colour in the genus.)

1. **Russula emetica** (Fr. Ep. p. 357).

Hab. Amongst leaves, dead bark, etc., *Archer*.

Gen. VI. CANTHARELLUS, *Adans.*

Hymenophorum inferum in tramam floccosam descendens, immutatum. *Lamellæ* crassæ, obtusæ.

A large genus, distinguished from *Agaricus* by the vein-like obtuse gills, which are not essentially reticulate. The species are either fleshy or membranaceous. One species only has been found in Tasmania. (Name from *cantharus*, a jar.)

1. **Cantharellus strigipes** (Berk.); pileo hepatico convexo, stipite concolore sursum attenuato e strigis fulvis oriundo, plicis angustis radiantibus.

Hab. Amongst charcoal, fern, etc., *Archer*.

Pileus ¼ inch across, plane or convex and subumbonate, brownish-grey. *Stem* 1 inch high, smooth, of the same colour, attenuated upwards, springing from radiating, tawny strigæ; *folds* narrow, radiating, grey.—The strigose base at once distinguishes this species when well developed. It has the habit of *C. umbonatus*.

Gen. VII. MARASMIUS, *Fr.*

Hymenophorum a stipite cartilagineo l. corneo heterogeneum. *Lamellæ* nunc latæ, nunc plicæformes, acie acuta, valleculis contiguis.—*Fungi membranacei l. carnoso-lenti revivescentes.*

Distinguished from *Agaricus* by the tough, coriaceous substance of the pileus, so that the species shrivel up but do not easily decay. Tasmania is not at all rich in species. (Name from μαραινω, *to wither*.)

1. **Marasmius hepaticus** (Berk. in Hook. Lond. Journ. Bot. v. p. 1).

Hab. On various dead substances, *Gunn*.

2. **Marasmius affixus** (Berk. sub *Agarico* in Hook. Lond. Journ. Bot. vii. p. 573); pileo hemisphærico demum resupinato albido stipiteque brevi farinaceo-tomentosis, lamellis paucis adnatis ochraceis, interstitiis lævibus.

HAB. On dead wood, growing on a *Thelephora* or *Mycelium*, resembling *T. sebacea, J. D. H.*

Gregarious. *Pileus* 1–2 lines or more across, subresupinate, dirty-white, hemispherical, slightly grooved, tomentose, often greyish or brownish when old, at length resupinate. *Stem* about 1 line high, tomentose, curved back. *Gills* few, adnate, thick, ochraceous; interstices even.—This species, like *M. epileucus*, Berk., seems generally to grow on a substance like *Thelephora sebacea*, but whether of the nature of a *Mycelium* or not I am unable to say. In some conditions the pileus becomes entirely attached, and then resembles *M. adhærens*, Berk. and Curt., a Venezuelan species.

3. **Marasmius subsupinus** (Berk.); pusillus, pileo convexo rugosiusculo furfuraceo postice adhærente, stipite brevi farinaceo, lamellis paucis rigidis planis.

HAB. On dead wood, *Archer*.

About $\frac{1}{3}$ of an inch across, ochraceous, with a rufous tinge, convex, rigid, furfuraceous, attached behind; border sulcate or crenate. *Stem* short, farinaceous. *Gills* few, rather thick, firm; edge entire, obtuse, plane or only very slightly ventricose.—The gills are so thick and rigid that this pretty species might almost be placed in *Lentinus*. It varies in colour from nearly white to rufous.

4. **Marasmius Eucalypti** (Berk.); pileo conico umbone operculiformi terminato l. obtuso brunneolo sericeo, stipite setæformi compresso nitente, lamellis ventricosis albis, interstitiis venosis.

HAB. On fruit and twigs of some *Eucalyptus*, *Archer*.

Pileus $\frac{1}{2}$–$\frac{1}{3}$ inch high, conical, brownish, silky, obtuse and truncate, or ending in an apiculate operculiform umbo; margin often reflected. *Stem* setiform, variable in length, dark, shining, sometimes branched and creeping. *Gills* few, cream-coloured, ventricose, attenuated above; interstices wrinkled.—A very distinct and beautiful species.

5. **Marasmius meloniformis** (Berk.); minutus, pileo hemisphærico spadiceo umbilicato profunde sulcato farinaceo, stipite setæformi nitido, lamellis albidis.

HAB. On leaves of *Eucalypti*, and on twigs, *Archer*.

Minute. *Pileus* $\frac{1}{3}$–1 line across, hemispherical, umbilicate, with about ten deep furrows and as many rounded ribs. *Stem* variable in length, sometimes creeping and branched, dark, shining. *Gills* few, white.—A pretty little species, allied to *M. hæmatocephalus*, etc.

Gen. VIII. LENTINUS, *Fr.*

Coriaceus l. carnoso-lentus. *Lamellæ* cum hymenophoro concretæ, discretæ (nec plicæformes), tenues, absque trama distincta, acie acuta dentata vel inciso-lacerata.

A fine genus, abounding in tropical climates, but not confined to them, and differing from *Agaricus* in the tougher, more persistent substance. The Tasmanian species approach nearer to tropical types than most other Tasmanian *Fungi*. (Name from *lentus*, tough.)

1. **Lentinus fasciatus** (Berk. in Hook. Journ. Bot. ii. p. 146).

HAB. On dead branches, *Gunn, etc.*

2. **Lentinus hepatotrichus** (Berk.); pileo ungulato hepatico antice glabrescente postice strigoso, lamellis latis pallidis margine crenato-dentatis. (TAB. CLXXXI. Fig. 9.)

HAB. On Stringy-bark Gum-tree: bank of Ovens Rivulet, July, 1855, *Archer*.

Pileus ungulate, sessile, $\frac{3}{4}$–1 inch broad, liver-coloured, at length smooth in front, behind covered with strigose tufts of hairs. *Gills* broad, distant, far paler than the pileus, and yellowish, with the edge strongly crenato-dentate. *Spores* dirty-white, elliptic.—PLATE CLXXXI. Fig. 9; *a*, upper side, *nat. size*; *b*, under side, *ditto*; *c*, spores on sporophores.

3. **Lentinus pulvinulus** (Berk.); resupinatus vel vertice affixus, pulvinatus, pileo pallido glabro margine sulcato, lamellis latis ochroleucis integris. (TAB. CLXXXI. Fig. 10.)

HAB. On dead wood, *Archer*.

About ⅓–1 inch across or resupinate, laterally attached, remarkably convex, smooth, ochraceous; margin sulcate. *Gills* very broad, yellowish, farinaceous; edge entire.—There are but three individuals of this very interesting species, and those not very perfect, but they show that it is quite distinct from anything that has hitherto been published in this beautiful group.—PLATE CLXXXI. Fig. 10; *a*, plant, *nat. size; b*, vertical section.

There are two indifferent specimens in the Tasmanian collections of an obscure, smooth *Lentinus*, with an even stem, which is possibly undescribed, but I have not sufficient materials to draw up a good character.

Gen. IX. PANUS, *Fr.*

Carnoso-coriaceus, tenax, arescens. *Lamellæ* perfectæ, tenaces, inæquales, acie acuta integerrima, trama distincta fibrosa in hymenium radiante.

Distinguished from *Lentinus* by its fibrous trama, and the entire edge of the gills. (Name from *panus*, a web; in allusion to the nature of the trama.)

1. **Panus saccharinus** (Berk.); pileo reniformi horizontali subcarnoso, stipite brevi furfuraceo vel obsoleto, lamellis margine glanduloso-appendiculatis.

HAB. On dead wood, *Archer*.

From ½–1 inch across, reniform, somewhat fleshy, wrinkled when dry, either entirely sessile or springing from a short furfuraceous stem. *Gills* moderately broad; edge glandular, as if dusted with sugar. The tint varies from ochraceous to lateritious.—This species is closely allied to *Panus stypticus*, but appears to be truly distinct. The gills are broader, and the pileus, though not smooth, is by no means broken up into furfuraceous scales.

Gen. X. XEROTUS, *Fr.*

Hymenophorum cum stipite contiguum, descendens in tramam cum pileo coriaceo-membranaceo tenui homogeneum. *Lamellæ* integræ, obtusæ, coriaceæ.

A most beautiful genus, resembling *Cantharellus*, but differing in substance, and in the broad gills of the more typical species. (Name from ξηρος, *dry*.)

1. **Xerotus Archeri** (Berk.); pileo reniformi minutissime ruguloso sulcato rufo, stipite brevissimo, margine deflexo, lamellis umbrino-brunneis inæqualibus simplicibus latiusculis distantibus paucis interstitiis lævibus. (TAB. CLXXXII. Fig. 1.)

HAB. On dead sticks, etc., *Archer*.

Pileus ¾ inch broad, red-brown, in parts paler, very minutely wrinkled, sulcate, smooth, at first furfuraceous; margin waved. *Stem* very short, lateral, pulverulent. *Gills* few, simple, moderately broad, waved, with shorter ones intermixed, brownish; interstices even.—Closely allied to *X. discolor*, which however differs in the absence of a stem, the more simple gills, etc. I have the same species from Chili.—PLATE CLXXXII. Fig. 1; *a*, plant of *nat. size*.

2. **Xerotus papyraceus** (Berk.); papyraceus, pileo pallido striato l. lævi tenui, margine demum expanso, lamellis simplicibus fuscis l. pallidis. (TAB. CLXXXII. Fig. 2.)

HAB. On dead wood, *J. D. H.*, *Archer*.

Subimbricated, thin, pallid, at first convex, ½ inch broad, striate; margin expanded. *Stem* very short or obsolete. *Gills* brown, simple, more numerous than in the last species.—This is very distinct, but its characters are

not easily defined. It is thinner, with scarcely any tint of red, and the gills are nearly twice as numerous. Dr. Hooker's specimens have the pileus even, and the gills pallid.—PLATE CLXXXII. Fig. 2; *a*, plant of *nat. size*.

Gen. XI. SCHIZOPHYLLUM, *Fr.*

Aridus, excarnis. *Lamellæ* coriaceæ, ramoso-flabelliformes, acie longitudinaliter fissa, lamellulis discretis extrorsum revolutis.

The split gills distinguish this genus from every species of the Agaricinous group except *A. schizophyllus*, from which the habit, substance, and whole character at once separate it. It appears to be rare in Tasmania, as might be supposed from the very European type of almost all its species. (Name from σχιζω, *to clean*, and φυλλον, *a leaf*.)

1. **Schizophyllum commune** (Fr. Ep. p. 403).

HAB. On dead wood, *J. D. H.*

It does not occur in the other collections. No species of *Lenzites* have yet been discovered, and the genus is also absent from New Zealand, except under the tropical form of *L. repanda*.

Gen. XII. BOLETUS, *L.*

Hymenophorum ab hymenio prorsus discretum, nec in tramam descendens; tubuli ab hymenophoro secedentes.

This genus, which contains many species, is in the series *Polyporei* what *Agaricus* is in *Agaricinei*, exhibiting at the same time the same loose connection between the hymenium and pileus as *Paxillus*. Exotic species are but little known, but those which have been noticed often exceed in beauty European forms. Two only have been distinguished in Tasmania, but there is evidence of other forms. (Name from *Boletus*, a mushroom; itself formed from βωλιτης.)

1. **Boletus fruticicola** (Berk. in Hook. Lond. Journ. Bot. vi. p. 574).

HAB. On the roots of shrubs, *Gunn*

2. **Boletus megalosporus** (Berk.); pileo plano subalutaceo, stipite deorsum incrassato areolato monticuloso sursum reticulato, poris incarnatis, sporis maximis uni-triseptatis. (TAB. CLXXXII. Fig. 3.)

HAB. On the ground, principally under trees: Cheshunt, *Archer*.

Pileus 4 inches across, flat but waved, tan-coloured, tinged with umber. *Stem* 2 inches high, bulbous, pale tan-coloured, reticulated above, below divided into pulvinate areolæ. *Tubes* rose-coloured. *Spores* oblong, uni-triseptate, $\frac{1}{230}$ inch long, $\frac{1}{600}$ broad.—Unfortunately no specimens have been preserved; the exact affinities cannot therefore be indicated, though the species is probably near *Boletus alutarius*. The large spores and very peculiar stem, with other characters, will at once point out the species.—PLATE CLXXXII. Fig. 3; *a*, plant, *nat. size*; *b*, spore, *magnified*.

Gen. XIII. POLYPORUS, *Fr.*

Hymenophorum inter poros in tramam descendens, sed cum eisdem in stratum proprium seu discolor mutatum. *Pori* cum pilei substantia contigui, a se invicem haud separabiles, primitus obsoleti seu minutissimi.

An enormous genus, containing many truly tropical species, of which scarcely one enters into the Tasmanian Flora. As in the 'Flora of New Zealand,' I retain the divisions proposed by Fries in his 'Epicrisis,' without however venturing any opinion contrary to his later views. (Name from πολυς, *many*, and πορος, *a pore*.)

1. **Polyporus (Mesopus) oblectans** (Berk. in Lond. Journ. Bot. iv. p. 51).
HAB. On the ground, *Gunn, Archer, J. D. H.*

I have no perfect specimens of white, fleshy, or coriaceous *Mesopodes*. There is however evidence of the occurrence of one or perhaps two species in Tasmania.

2. **Polyporus (Mesopus) rudis** (Berk. Ann. Nat. Hist. iii. p. 323). (TAB. CLXXXII. Fig. 4.)
HAB. On dead wood, *Lawrence, Gunn, Archer, etc.*

PLATE CLXXXII. Fig. 4, plant of *nat. size.*

3. **Polyporus (Pleuropus) elegans** (Fr. Ep. p. 440).
HAB. On dead wood, *Archer.*

4. **Polyporus (Pleuropus) intonsus** (Berk.); pileo flabelliformi tenui velutino brunneo, stipite excentrico brevi, hymenio albo, poris minutis punctiformibus decurrentibus.
HAB. On dead wood, *Archer.*

Pileus flabelliform, 1 inch long and broad, depressed behind, thin, brown, with a rufous tinge, minutely velvety, somewhat virgate. *Stem* 2 lines high, 1½ thick, attached by an orbicular disc. *Hymenium* white. *Pores* decurrent, minute, punctiform, $\frac{1}{180}$ inch across.—A small species, allied to *P. varius.*

5. **Polyporus (Pleuropus) lucidus** (Fr. Ep. p. 442).
HAB. On dead wood, *Lawrence, Gunn.*

6. **Polyporus (Pleuropus) sanguineus** (Fr. Ep. p. 444).
HAB. On dead wood, *Gunn.*

Apparently a rare species in Tasmania, although *P. cinnabarinus* is extremely abundant.

7. **Polyporus (Merisma) frondosus** (Fr. Ep. p. 446).
HAB. On dead trees, *Gunn.*

8. **Polyporus (Merisma) sulphureus** (Fr. Ep. p. 450).
HAB. On dead wood, *Gunn.*

9. **Polyporus (Merisma) radiato-rugosus** (Berk. in Ann. Nat. Hist. iii. 323).
HAB. On dead wood, *Gunn.*

10. **Polyporus (Anodermei) tephronotus** (Berk.); pileo molli tomentoso niveo postice brunneo, hymenio ex albo subcinerascente, poris minimis subrotundis. (TAB. CLXXXII. Fig. 5.)
HAB. On dead wood, *Archer.*

Pileus 2 inches or more across, 1½ inch long, sometimes pulvinate, sometimes thin, tomentose, almost spongy, pure-white, changing behind to brown. *Hymenium* white, but gradually assuming a pale-cinereous tint. *Pores* minute, $\frac{1}{140}$ inch across, scarcely visible to the naked eye, punctiform.—This, though obviously belonging to the same section as *P. epileucus*, is allied to *P. angustus* and *rhinocephalus*. The older part sometimes becomes wrinkled, as in the latter species. There is a resupinate form, which at first sight seems distinct.—PLATE CLXXXII. Fig. 5; plant of *nat. size.*

11. **Polyporus (Anodermei) campylus** (Berk.); pileo palmato lobato albo glabrescente, hymenio concavo, poris parvis irregularibus, margine obtusiusculo. (TAB. CLXXXII. Fig. 6.)
HAB. On dead wood, *Archer.*

Pileus slightly imbricated, 1½–2 inches long, flabelliform, deeply lobed, and sometimes anastomosing, strongly curved when dry, white, slightly grooved, nearly smooth. *Hymenium* concave, white. *Pores* irregular, $\frac{1}{80}$ inch across; edge rather obtuse.—This belongs to the same section as *P. borealis*, and is at once distinguished by its strongly lobed margin, which is deeply incurved when dry.—PLATE CLXXXII. Fig. 6; plant of *nat. size.*

12. **Polyporus (Anodermei) angustus** (Berk.); pileo angusto antice renascente pallido subtomentoso postice exoleto scabriusculo fusco decurrenti-adnato, hymenio albo, poris minimis angulato-punctiformibus. (TAB. CLXXXII. Fig. 7.)

HAB. On dead wood, *Archer.*

Pileus ½–⅓ inch long, 2½ inches wide, decurrenti-affixed, behind exolete, brown, slightly scabrous, in front pale, slightly tomentose. *Hymenium* white. *Pores* very minute, $\frac{1}{170}$ inch across, not visible to the naked eye, angulari-punctiform. *Substance* white, moderately firm.—This species seems strictly biennial. The more recent parts gradually acquire a resinous appearance, and at length become brown and almost laccate.—PLATE CLXXXII. Fig. 7, *nat. size.*

13. **Polyporus (Anodermei) rhinocephalus** (Berk.); pileo dimidiato conchato tenui albido primum tomentoso demum scabro-venoso l. aculeato, poris ex albido cinereis minutis. (TAB. CLXXXII. Fig. 8.)

HAB. On dead wood, *Archer.*

Pileus 1 inch broad, ¾ inch wide, dimidiate, conchate, thin, rigid when dry, at first white tomentose, nearly even, at length scabro-venous or aculeate, becoming resinous, and at length brown. *Hymenium* concave, at first pale like the pileus, then cinereous. *Pores* minute, angular, $\frac{1}{140}$ inch across.—This species appears to be allied to *P. adustus*, but is more rigid when dry, and has a very different aspect. It is also closely allied to *P. angustus.*—PLATE CLXXXII. Fig. 8, *nat. size.*

14. **Polyporus (Anodermei) Gunnii** (Berk.); pileo flabellato tenui albido sordescente tomentoso rugosiusculo subzonato, intus niveo, hymenio albo, poris irregularibus mediis.

HAB. On twigs, etc.: Back River Gully, New Norfolk, *Gunn, J. D. H.*

Pileus flabelliform, 3–4 inches across, 2½ inches long, thin, slightly wrinkled, sometimes obscurely zoned, tomentose, dirty-white, becoming brownish; edge very thin. *Hymenium* white. *Pores* irregular, $\frac{1}{40}$ inch across. *Dissepiments* toothed.—Allied to *P. adustus.*

15. **Polyporus (Anodermei) pelliculosus** (Berk. in Hook. Lond. Journ. Bot. vi. p. 575).

HAB. On dead wood, *Gunn, Archer, etc.*

16. **Polyporus (Placodermei) portentosus** (Berk. in Hook. Lond. Journ. Bot. iii. p. 188).

HAB. On dead wood, *Gunn, Archer, etc.*

Allied to *P. betulinus.*

17. **Polyporus (Placodermei) ochroleucus** (Berk. in Hook. Lond. Journ. Bot. iv. p. 53).

HAB. On trunks of trees, *Gunn.*

18. **Polyporus (Placodermei) australis** (Fr. Ep. 464).

HAB. On dead wood, *Gunn, Archer, etc.*

Common on *Fagus Cunninghamii.*

19. **Polyporus (Placodermei) igniarius** (Fr. Ep. p. 160).

On dead wood, *Gunn, etc.*

A very large form occurs on *Eucalyptus.*

20. **Polyporus (Placodermei) Gourliæi** (Berk.); dimidiatus, pileo convexo parce zonato stuppeo-velutino umbrino contextu molli-suberoso porisque mediis angulatis concoloribus.

HAB. On bark. Communicated by the late *Mr. W. Gourlie.*

About 1 inch across, ⅔ long, dimidiate, convex, umber, tinged with yellow, with two or three zones, clothed, especially behind, with coarse pubescence. *Substance* moderately soft, pale-umber. *Pores* $\frac{1}{50}$ inch across, irregular, unequal; *dissepiment* rather thick.—Allied to *P. fulvus*, Fr., and *P. excavatus*, Berk.

21. **Polyporus (Placodermei) Laurencii** (Berk.).—Polyporus rubiginosus, *Berk. in Ann. Nat. Hist.* iii. *p.* 324 (*not of Fries*).

HAB. On dead wood, *Gunn, etc.*

22. **Polyporus (Placodermei) Tasmanicus** (Berk.); pileo angusto sulcato pallide fulvo tomentoso, hymenio contextuque concoloribus, poris minutis punctiformibus.

HAB. On dead wood, *Archer.*

Pileus apparently of several years' growth, very narrow, grooved, pale-tawny when young, slightly tomentose. *Hymenium* and *substance* of the same colour. *Pores* minute, punctiform, substratose, $\frac{1}{120}$ inch across.—This species resembles *P. conchatus* and *salicinus*, but the substance is of a far paler hue, and the appearance different.

23. **Polyporus (Inodermei) cinnabarinus** (Fr. Ep. p. 473).

HAB. On dead wood, *Gunn, Archer, J. D. H., etc.*

24. **Polyporus (Inodermei) scruposus** (Fr. Ep. p. 473).

HAB. On dead wood, *Gunn.*

I believe my *P. isidioides* is merely a state of this.

25. **Polyporus (Inodermei) lilacino-gilvus** (Berk. in Ann. Nat. Hist. iii. p. 324).

HAB. On dead wood, *Gunn, Archer, etc.*

26. **Polyporus (Inodermei) brunneo-leucus** (Berk. in Hook. Lond. Journ. Bot. v. p. 4).

HAB. On dead wood, *Gunn, Archer, etc.*

27. **Polyporus (Inodermei) versicolor** (Fr. Ep. p. 478).

HAB. On dead wood, *Gunn, Archer, J. D. H.*

28. **Polyporus (Inodermei) vernicifluus** (Berk.); pileo dimidiato subflabelliformi tenui vernicoso-polito rufo, hymenio pallido, poris minutis irregularibus.

HAB. On dead wood, *Archer.*

Pileus 1 inch broad, $\frac{3}{4}$ inch long, thin, slightly zoned, dimidiato-flabellate, covered with a thin, shining, rufous varnish; edge uneven, thin. *Hymenium* pale. *Pores* minute, scarcely visible to the naked eye, irregular, $\frac{1}{150}$ inch across; dissepiments thin.

29. **Polyporus (Inodermei) Friesii** (Kl. Linn. viii. t. 11).

HAB. On dead wood, *J. D. H.*

This species occurs also in the warmer parts of the United States.

30. **Polyporus (Resupinatus) apricus** (Berk.); resupinatus, effusus, laxe adhærens, xylostromaticus, cervino-pallidus, poris mediis sparsis, dissepimentis tenuibus.

HAB. On dead timber, *J. D. H.*

Effused, of a pallid fawn-colour, tinged here and there with yellow, membranous, adhering loosely, in parts slightly reflexed and tomentose. *Pores* occupying detached patches, $\frac{1}{70}$ inch across, pale fawn-coloured, angular; dissepiments thin, their edge acute.

31. **Polyporus (Resupinatus) merulinus** (Berk.); resupinatus, effusus, aurantiacus, subiculo tenui membranaceo tomentoso, poris mediis dissepimentis membranaceis.

HAB. On dead wood, *Archer.*

Orange-coloured, resupinate, effused, without any definite margin, or only the thin, somewhat membranaceous, tomentose subiculum. *Pores* elongated from their position, darker than the subiculum, small, $\frac{1}{70}$ inch across; disse-

piments thin, membranaceous.—This species has a Merulioid aspect, but is a true *Polyporus*, allied to *P. aneirinus*. Its dark-orange pores must render it a pretty species when fresh.

32. **Polyporus (Resupinatus) Archeri** (Berk.); resupinatus, effusus, armeniacus, coriaceo-membranaceus, margine tomentoso, poris minutis irregularibus, acie acuta.

HAB. On dead wood, *Archer*.

Effused, resupinate, coriaceo-membranaceous, apricot-coloured; margin tomentose, flat or slightly raised. *Pores* minute, $\frac{1}{100}$ inch across, irregular; edge acute.—The coriaceo-membranaceous texture and bright apricot tint easily distinguish this pretty species. Occasionally parts of the plant are bleached. The pores are much smaller than in *P. apricus*, which however differs in other respects.

33. **Polyporus (Resupinatus) orbicularis** (Berk. in Ann. Nat. Hist. iii. p. 324).

HAB. On dead wood, *Gunn*.

34. **Polyporus (Resupinatus) latus** (Berk. in Ann. Nat. Hist. iii. 325).

HAB. On dead wood, *Gunn, J. D. H.*

35. **Polyporus (Resupinatus) dædaleoides** (Berk. in Ann. Nat. Hist. iii. 325).

HAB. On dead wood, *Gunn*.

36. **Polyporus hyalinus** (Berk.); resupinatus, albus, vitreus, tenuis, ambitu tomentoso, poris minimis centro elongatis.

HAB. On dead decorticated wood, *Archer*.

Resupinate, thin; border tomentose, but tolerably even, not spreading out into byssoid threads. *Hymenium* much cracked when dry. *Pores* hyaline, very minute, elongated in the centre, $\frac{1}{150}$ inch across.—Allied to *P. vitreus*, but very thin and delicate.

37. **Polyporus (Resupinatus) vaporarius** (Fr. Ep. p. 487).

HAB. On dead wood, *Archer*.

Gen. XIV. HEXAGONIA, *Fr.*

Hymenophorum descendens in tramam cum pilei substantia omnino concolorem et similem. *Pori* alveolares primitus dilatati.

Distinguished from *Polyporus* by its regular, large pores, shaped like the cells of a honeycomb. The species are mostly tropical. (Name from *ἕξ, six*, and *γωνια, an angle*.)

1. **Hexagonia Gunnii** (Berk.).—Polyporus vesparius, *Berk. in Ann. Nat. Hist.* iii. *p.* 323.

HAB. On trunks of *Eucalyptus, Gunn, Archer, etc.*

Gen. XV. FAVOLUS, *Fr.*

Carnoso-lentus. *Hymenium* reticulatum, cellulosum, alveolatum. *Alveoli* radiantes e lamellis dense anastomosantibus formati, elongati, parietibus duplicatis.

The species approach some of the fleshy *Polypori*, but they differ in the cells being dilated from the first, as in *Hexagonia*. (Name from *favus*, a honeycomb.)

1. **Favolus pusillus** (Fr. in Linn. v. p. 511).

HAB. On dead wood, *Gunn*.

Gen. XVI. MERULIUS, *Hall.*

Hymenium ceraceo-molle, plicis obtusis reticulatum.

The reticulate folds distinguish this genus from its allies. The species belong principally to temperate regions. *M. corium* is very widely distributed, and assumes various forms. (Name originally given to the Morel, from *merus*, pure (safe to eat), and transferred to Fungi with a reticulate hymenium by Haller.)

1. **Merulius corium** (Fr. El. p. 58).
HAB. On dead wood, *Archer.*

2. **Merulius pallens** (Berk. in Ann. Nat. Hist. vi. 357).
HAB. On dead wood, *Archer.*

Some states are scarcely distinguishable from *Phlebia.*

Gen. XVII. POROTHELIUM, *Fr.*

Hymenium papillatum, papillæ demum aperte cum hymenophoro contiguæ.

The resupinate species are immediately connected with *Polyporus* by the corky *P. rugosum*, from South America. From *Fistulina* the genus is distinguished by habit rather than by any definite characters. (Name from *πορος, a pore*, and *θηλη, a pap.*)

1. **Porothelium subtile** (Fr. Ep. p. 504).
HAB. On dead wood, *Archer.*

Gen. XVIII. HYDNUM, *L.*

Hymenium aculeatum; *aculei* liberi, deorsum spectantes, nisi in resupinatis.

A large genus, containing the greater part of the Fungi which bear true prickles in contradistinction to broken pore-walls on the hymenium. *H. repandum*, a Tasmanian species, is one of the best esculent Fungi. (Name from *ὓδνον, a fungus.*)

1. **Hydnum lævigatum** (Swartz; Fr. Syst. i. p. 399).
HAB. On the ground, *Archer.*

2. **Hydnum repandum** (L. Suec. 1258).
HAB. On the ground, *J. D. H.*

3. **Hydnum cervinum** (Berk.); resupinatum, effusum, immarginatum, vinoso-pallidum, primitus subtiliter tomentosum, aculeis setiformibus.
HAB. On dead wood, *Archer.*

Very thin, effused, resupinate, at first minutely tomentose, arachnoid, then partially shining, as if washed with a delicate coat of gum, of a pallid-fawn tint. *Prickles* slender, short, setiform.

4. **Hydnum filicicola** (Berk.); resupinatum, effusum, immarginatum, album, tenue, setulis basi poroso-connexis applanatis acutis.
HAB. On dead Fern-stems, *Archer.*

Resupinate, thin, effused, immarginate, white, forming a thin membrane neither distinctly farinose nor tomentose. *Teeth* connected at the base so as to form imperfect pores, flat, acuminate, often triangular.—An obscure species, which bears a distant resemblance to *Polyporus vaporarius*, and approaches in its characters the genus *Irpex.*

5. **Hydnum udum** (Fr. Ep. p. 517).
HAB. On dead wood, *Archer.*

Gen. XIX. IRPEX, *Fr.*

Hymenium inferum, primitus dentatum; *aculei* varii, seriatim l. reticulatim dispositi basique plicis lamellosis (in sessilibus) porosisve (in resupinatis) concatenati.

Distinguished from *Hydnum* by the connected teeth. From *Polypori* they differ in not being essentially porous. (Name from *irpex*, a harrow.)

1. **Irpex Archeri** (Berk.); albus, resupinatus, margine tomentoso arachnoideo, dentibus reticulato-connexis brevibus palmatis. (TAB. CLXXXIII. Fig. 1.)
HAB. On dead wood, *Archer.*

Effused, resupinate, white; margin thin, tomentose, arachnoid, barren. *Teeth* connected at the base, short, palmate.—This curious species is allied to *Radulum palmatum*, Berk., and with that and one or two more will probably form a genus distinguished from *Irpex* by its palmate teeth. In *R. palmatum* (Ann. Nat. Hist. ix. p. 445) the teeth are one or two lines long; in this, which has essentially the same structure, they do not exceed half a line. The genus, if it be thought worthy of being distinguished, may be called *Cladodontia*.—PLATE CLXXXIII. Fig. 1; *a*. plant, *nat. size*; *b*, hymenium, *magnified.*

Gen. XX. GRANDINIA, *Fr.*

Hymenium amphigenum, ceraceum, primitus granulosum, granulis subsphæricis obtusis excavatisque.

Distinguished from allied genera by the granular nature of the aculei. The species approach sometimes very close to *Kneiffia.* (Name from *grando*, hail; in allusion to the granular hymenium.)

1. **Grandinia granulosa** (Fr. Ep. p. 527).
HAB. On decorticated wood, *Archer.*

2. **Grandinia australis** (Berk.); resupinata, effusa, immarginata, pallida, rimosa, intus nivea, hymenio granulato, granulis uni-bipapillatis.
HAB. On dead wood, *Archer.*

Entirely effused and resupinate, without any evident margin, pale, white within, cracked. *Hymenium* rough with unequal granules, each of which has one or more distinct papillæ.—This appears to be quite distinct from any of the European species, and to approach near to *Kneiffia*, from which it differs only in the papillæ not being prolonged into bristles.

Gen. XXI. ODONTIA, *Fr.*

Hymenium inferum, fibroso-contextum, protrudens verrucas apice cristato-multifidas inter se discretas.

A genus consisting of a few species only, separated from *Hydnum* by its wart-like, crested aculei. (Name from οδους, *a tooth.*)

1. **Odontia secernibilis** (Berk.); resupinata, membranacea, secernibilis, alba, aculeis brevissimis compressis subdivisis.
HAB. On dead wood, *J. D. H., Archer.*

Resupinate, separating entirely from the matrix, white, membranaceous, rather irregular. *Teeth* very minute, short, tomentose, compressed, slightly divided or toothed.—This has the habit of *H. ochraceum*, but the teeth of *Odontia.*

Gen. XXII. CRATERELLUS, *Fr.*

Carnosi. *Hymenium* distinctum, immutabile, demum subrugosum.

The species of this genus are analogous to *Cantharellus*, but belong to a different series. The only Tasmanian species looks like a stipitate *Merulius corium*. (Name from κρατηρ, *a goblet.*)

1. **Craterellus Pusio** (Berk.); aurantiacus, pileo laterali convexo, stipite lævi sursum incrassato, hymenio rugoso venoso.

HAB. Amongst Moss, *Archer.*

Orange. *Pileus* 2–3 lines across, convex, lateral. *Stem* about 2 lines high, incrassated above. *Hymenium* concave, darker than the pileus, rugoso-venose.—A small but very pretty species.

Gen. XXIII. THELEPHORA, *Fr.*

E carnoso rigescentes, subcoriacei; *hymenio* cum pileo anodermeo concreto, ramoso-costato papillosove.

In the more typical species the hymenium is various, papillary, or venose, but in some it is nearly even. The absence of any cuticle is an important character affecting the form, which is usually less definite than in *Stereum.* (Name θηλη, *a pap*, and φερω, *to bear.*)

1. **Thelephora riccioidea** (Berk.); resupinata, arcte affixa, radiato-ramosa, pallida.

HAB. On the bare soil: New Norfolk, *Gunn.*

Three inches or more across, closely fixed to the soil, radiating, branched, dirty-white; divisions dilated above, convex or concave.—This rather coarse species differs from every other with which I am acquainted. At first sight it somewhat resembles *Thelephora sebacea*, but it is essentially branched.

2. **Thelephora Sowerbeii** (Berk.).—Helvella pannosa, *Sow. t.* 155.

HAB. On the ground, *Gunn, Archer, etc.*

3. **Thelephora Archeri** (Berk.); dichotoma, stipitibus deorsum connatis, ramis compressis sursum dilatatis ochraceis, apicibus acutis brunneis. (TAB. CLXXXIII. Fig. 2.)

HAB. On the ground, *Archer.*

About 1¾ inch high, dichotomous. *Stems* springing from a white, downy mycelium, combined below into a solid cylindrical mass, 2 lines thick, branched two or three times, forked, ochraceous; tips acute, brown.—PLATE CLXXXIII. Fig. 2; plant, *nat. size; b*, portion, *magnified.*

4. **Thelephora sebacea** (Fr. Ep. p. 542).

HAB. Running over *Jungermanniæ*, etc., *J. D. H.*

From the minuteness of the plants round which it grows, the specimens have a different appearance from those of Europe, but it seems to be the same species.

5. **Thelephora viridis** (Berk.); resupinata, effusa, immarginata, tomentoso-mollis, viridis, hymenio granulato.

HAB. On dead wood, *Archer.*

Effused, about an inch broad, dull-green, of a soft tomentose substance. *Hymenium* covered with minute granules, not visible to the naked eye. In colour it resembles *Hydnum viride.*

Gen. XXIV. STEREUM, *Fr.*

Hymenium coriaceum, sat crassum, cum strato intermedio pilei dermatini concretum, læve, semper immutatum et contiguum, persistens.

The Tasmanian species are for the most part European. *S. lobatum* is a tropical and subtropical form. (Name from στερεος, *stiff.*)

1. **Stereum lobatum** (Kze. in Weig. Exs.).
HAB. Tasmania, *Gunn, Archer, Lawrence, J. D. H.*

2. **Stereum purpureum** (Fr. Ep. p. 548).
HAB. On dead wood, *Archer.*

3. **Stereum hirsutum** (Fr. Ep. p. 549).
HAB. On dead wood, *J. D. H., Gunn, Archer.*

4. **Stereum concolor** (Berk.); albidum, pileo dimidiato postice decurrente molli tomentoso per exsiccationem contracto involuto, hymenio lævi concolore.
HAB. On twigs, dead branches, etc., *Archer.*

Dirty-white, sometimes tinged with ochre. *Pileus* dimidiate or effuso-reflexed, decurrent behind, soft, tomentose, contracted and involute when dry. *Hymenium* smooth, even, of the same colour as the pileus.—Distinguished from every form of *S. hirsutum* by its less coriaceous substance, in consequence of which it is contracted when dry.

5. **Stereum spadiceum** (Fr. Ep. p. 549).
HAB. On dead wood, *Archer.*

6. **Stereum illudens** (Berk. in Hook. Lond. Journ. Bot. iv. p. 59).
HAB. On dead wood, *J. D. H., Gunn, Archer.*

7. **Stereum rubiginosum** (Fr. Ep. p. 550).
HAB. On dead wood, *Archer.*

8. **Stereum Archeri** (Berk.); resupinatum, effusum, immarginatum, secernibile, vinoso-fuscum, setulosum, intus umbrinum.
HAB. On dead wood, *Archer.*

Effused, resupinate, rigid when dry, moderately thick, of a deep mulberry-brown, setulose, very sparingly cracked, umber within, separating from the matrix.—Allied to *Stereum rubiginosum.*

9. **Stereum acerinum** (Fr. Ep. p. 553).
HAB. On bark, *Archer.*

Gen. XXV. CORTICIUM, *Fr.*

Hymenium amphigenum, vegetum et fertile tumens, carnoso-molle, udum, undulatum papillosumve, siccitate collabens, lævigatum, sæpissime rimoso-incisum.

Distinguished from *Thelephora* and *Stereum* by the softer, more tender hymenium. (Name from *cortex*, bark; in consequence of the habitat of many of the species.)

1. **Corticium ochroleucum** (Fr. Ep. p. 557).
HAB. On dead wood, *Archer.*

2. **Corticium Mougeotii** (Fr. Ep. p. 558).
HAB. Tasmania, *Archer.*

This beautiful species occurs in the Himalaya, as well as in Europe and Tasmania.

3. **Corticium læve** (Fr. Ep. p. 560).
HAB. On dead wood, *Archer.*

4. **Corticium roseum** (Fr. Ep. p. 560).
HAB. On dead wood, *Archer.*

5. **Corticium sulphureum** (Fr. Ep. p. 561).
HAB. On dead wood, *Archer.*

6. **Corticium cretaceum** (Fr. Ep. p. 566).—Thelephora cretacea, *Obs.* i. *p.* 153.
HAB. On dead bark, *Archer.*

7. **Corticium Archeri** (Berk.); resupinatum, rufo-pallidum, intus album, crassiusculum, rimosum, immarginatum.
HAB. On charred wood, *Archer.*

Effused, resupinate, immarginate, of a dirty pale-rufous, cracked, white within.—Allied to *C. carneum.*

8. **Corticium arachnoideum** (Berk. in Ann. Nat. Hist. xiii. p. 345).
HAB. On dead wood, *Archer.*

Specimens occur in the collection which I at first referred to *Auricularia minuta*, Berk., but I am now inclined to refer them as a var. to *S. hirsutum.*

Gen. XXVI. GUEPINIA, *Fr.*

Gelatinosa, subtremellina, intumescens, sicca contrahitur, subcartilaginea. *Hymenium* definite inferum vel primitus superum, immutatum, persistens.

Between *Thelephora* and *Tremella.* Some of the species are beautiful Fungi. (Name from *Guepin*, a French botanist.)

1. **Guepinia Pezizæformis** (Berk. in Hook. Lond. Journ. Bot. iv. p. 60).
HAB. On dead wood, *J. D. H., Gunn, etc.*

Gen. XXVII. CYPHELLA, *Fr.*

Submembranacea, postice adnata, subporrecta, pendula, raro erecta. *Hymenium* ut plurimum inferum, non discretum, demum inæquabile.

This genus includes those cup-shaped Fungi which are destitute of true asci. The species are mostly small and obscure. (Name from κυφος, *leaning forward.*)

1. **Cyphella muscigena** (Fr. Ep. p. 567).
HAB. On mossy twigs, *Archer.*

2. **Cyphella capula** (Fr. Summa. p. 336).
HAB. On dead bark, *Archer.*

Gen. XXVIII. CLAVARIA, *L.*

Carnosa, ramosa l. simplex, teres absque stipite distincto; hymenio contiguo, sicco.

A vast genus, represented in Tasmania by several European forms, of which one or two are esculent. I have seen two other species besides those here enumerated, but cannot determine them from dried specimens. (Name from *clava*, a club.)

1. **Clavaria Botrytis** (Pers. Fr. Ep. p. 571).
HAB. On the ground, *Archer.*

2. **Clavaria cristata** (Holmsk. Fr. Ep. p. 572).

HAB. On the ground, and on Fern-stems, *Archer.*

A fuliginous variety, which is sometimes divided, sometimes simply clavate, and then approaching the dark state of *Clavaria rugosa.*

3. **Clavaria lutea** (Vittadini, Fung. Mang. t. 29. f. 3).

HAB. On the ground, *Archer.*

4. **Clavaria inæqualis** (Muell. Fr. Ep. p. 577).

HAB. On the ground, *Archer.*

There are two forms in the collection, a larger and a smaller.

5. **Clavaria Archeri** (Berk.); fasciculata, brevis, aurantiaca, flabellato-clavata, rugosiuscula. (TAB. CLXXXIII. Fig. 3.)

HAB. On the ground, *Archer.*

About 1 inch high, tufted, orange, flabellato-clavate from a thin stem, slightly wrinkled.—A very pretty species, approaching in appearance some of the pale *Thelephoræ.* There is a taller variety of a deeper tint, and less tufted growth.—PLATE CLXXXIII. Fig. 3, plants, *nat. size.*

6. **Clavaria rhizomorpha** (Berk.); erumpens, confluens, castaneo-rubra, subsimplex. (TAB. CLXXXIII. Fig. 4.)

HAB. On dead bark, *Archer.*

Springing from cracks in the bark, confluent at the base, of a rich chestnut-red, simple or very slightly branched, irregular, obtuse.—A very singular species, with the habit of *Calocera.*—PLATE CLXXXIII. Fig. 4, plants, *nat. size.*

7. **Clavaria juncea** (Fr. Ep. p. 579).

HAB. On twigs, *Archer.*

The Tasmanian form is very slender, and creeps frequently for several inches along decayed twigs. It is, I believe, the same with *Calocera filum*, Lév., a Chilian Fungus, confounded by Léveillé with *Crinula Gayana*, M., which, however similar in appearance when incomplete, is distinguished when perfect by its abrupt, terminal, globular head.

Gen. XXIX. CALOCERA, *Fr.*

Omnia *Clavariæ* excepto *contextu* firmo gelatinoso.

Distinguished from *Clavaria* by the gelatinous substance, in consequence of which, when dry, the plant appears horny. (Name from καλος, *beautiful*, and κερας, *a horn.*)

1. **Calocera Guepinioides** (Berk. in Hook. Lond. Journ. Bot. iv. p. 61).

HAB. On dead wood, *J. D. H.*, *Archer.*

The Tasmanian specimens belong to the simple form.

Gen. XXX. TREMELLA, *Dill.*

Gelatinosa, tremula, immarginata, enucleata, contextu floccoso, epapillosa, undique fructificans. *Sporæ* e sporophoris discretis oriundæ, simplices.

Separated from *Dacrymyces* by its simple, not septate spores, and from some others of the section by its more gelatinous substance and indeterminate hymenium. (Name from *tremulus*, trembling; in allusion to the soft substance.)

1. **Tremella frondosa** (Fr. Ep. p. 588).
HAB. On dead wood, *Gunn.*

2. **Tremella foliacea** (Fr. Ep. p. 588).
HAB. On dead wood, *Gunn, Archer.*

3. **Tremella lutescens** (Fr. Ep. p. 588).
HAB. On dead wood, *Archer.*

4. **Tremella mesenterica** (Retz, Fr. Ep. p. 588).
HAB. On dead wood, *Gunn, Archer.*

Both spermatiferous and sporiferous.

5. **Tremella albida** (Huds. Fr. Ep. p. 589).
HAB. On dead wood, *Archer.*

6. **Tremella olens** (Berk.); irregularis, gelatinosa, pallida, olens, sporis oblongis. (TAB. CLXXXIII. Fig. 5.)

HAB. On dead wood, *Archer.*

Irregular, dirty-white, inclining to brown, effused, slightly lobed. *Spores* oblong, $\frac{1}{1750}-\frac{1}{2000}$ inch in length, accompanied by very minute subglobose spermatia. *Smell* faint, unpleasant.—When dry, forming a shapeless mass, like the young state of some *Gasteromycete.* I have seen no globose or lobed sporophores in this species.—PLATE CLXXXIII. Fig. 5; *a*, structure; *b*, spores; *c*, spermatia:—*all magnified.*

7. **Tremella viscosa** (Berk. et Br. in Ann. Nat. Hist. xiii. p. 406).
HAB. On dead wood, *Archer.*

Gen. XXXI. EXIDIA, *Fr.*

Gelatinosa, tremula, submarginata, contextu floccoso, subtus sterilis; *hymenio* papillato.

Distinguished at once from *Tremella* by the inferior surface being sterile, and the upper papillate. (Name from *exsudo*, to ooze out.)

1. **Exidia glandulosa** (Fr. Ep. p. 591).
HAB. On dead wood, *Archer.*

Gen. XXXII. HIRNEOLA, *Fr.*

Tremula, sed non gelatina distenta, subtus hispidula; *hymenio* lævi, distincto.

Separated from *Exidia* on account of its firmer substance and even hymenium. In most of the species the barren surface is hispid. *H. auricula* is found in almost every part of the world. (Name from *hirnea*, a vessel.)

1. **Hirneola Auricula-Judæ** (Berk.). (Exidia, *Fr.*)
HAB. On dead wood, *Gunn.*

2. **Hirneola vitellina** (Mont. Syll. p. 182); pallida, orbicularis, undulata, pusilla, stipite brevi compresso, sporis endochromate multiannulato.—*Berk. in Fl. Antarct. p.* 240. *t.* 164. *f.* 3. Exidia vitellina, *Lév.* (TAB. CLXXXIII. Fig. 6.)

HAB. On dead wood, *Archer.*

Pale honey-coloured (orange or deep-yellow), $\frac{1}{8}$ inch across, orbicular, umbilicate, undulated, even beneath. *Stem* short, compressed, darker than the pileus. *Spores* $\frac{1}{1250}-\frac{1}{1500}$ inch long, hyaline, curved, obtuse above, rather pointed at the base. *Endochrome* hyaline, divided into several annular masses, which are sometimes again divided;

threads flexuous, often suddenly curled over at the origin of the branches.—This description is taken from the Tasmanian specimens, but the Fuegian and Chilian plants appear to be the same thing, differing only in their brighter colour.—Plate CLXXXIII. Fig. 6, structure of plant; *b b*, spores, more or less *magnified.*

Gen. XXXIII. DACRYMYCES, *Nees.*

Omnia *Tremellæ* exceptis sporis septatis conidiis magnis spermatiisque e sporis oriundis.

The hymenium is more or less indeterminate, as in *Tremella*, but the spores are septate, and the spermatia grow on the spores. There are also large conidia, formed from the articulations of the terminal branchlets. (Name from δακρυ, *a tear*, and μυκης, *a fungus.*)

1. **Dacrymyces deliquescens** (Duby).

Hab. On dead wood, *Archer.*

The cells in the curved spores vary from four to six.

2. **Dacrymyces miltinus** (Berk.); pusilla, cinnabarina, gyroso-lobata. (Tab. CLXXXIII. Fig. 7.)

Hab. On hard, dry wood, *Archer.*

Of a bright, red-orange, short, wavy, lobed. *Spores* oblongo-reniform, at length 6-septate, $\frac{1}{1250}$–$\frac{1}{1666}$ inch long. *Sporophores* swollen.—The brighter colour, larger and more swollen sporophores, and 6-septate spores, distinguish this species from *D. deliquescens.*—Plate CLXXXIII. Fig. 7; *a*, plants, *nat. size; b*, sporophores; *c*, spore:—*both magnified.*

3. **Dacrymyces sclerotioides** (Berk.); albus, orbicularis, centro depressus, pezizæformis. (Tab. CLXXXIII. Fig. 8.)

Hab. On dead bark, *J. D. H.*

About 1 line broad, white, orbicular, depressed in the centre, almost cartilaginous. *Nucleus* firm; *ultimate apices* of some of the branches clavate and septate.—This and the following species agree in the septate tips of some of the branches, corresponding with the deciduous tips in the asporous form of *D. deliquescens.* In neither have I at present found true spores.—Plate CLXXXIII. Fig. 8; *a*, plants, *nat. size; b, c*, structure, *magnified; d*, ditto in *D. seriatus.*

4. **Dacrymyces seriatus** (Berk.); erumpens, seriatus, albidus, sublutescens, irregularis, substratosus.

Hab. On dead bark, *Archer.*

Forming rows of confluent, small, dirty-white, subcartilaginous patches, which exhibit within three or four concentric lines of growth. Tips of some of the threads clavate and septate.

Gen. XXXIV. OCTAVIANIA, *Vitt.*

Integumentum molliusculum, haud ægre solubile; trama e fibris byssaceis intexta. *Sporæ* sphæricæ, demum echinatæ.

A genus of Truffles, allied to *Hydnangium*, but differing in its more easily separable integument, fibrous not cellular trama, and globose spores. (Name from *Ottaviani*, an Italian mycophilist.)

1. **Octaviania Archeri** (Berk.); obovata, pusilla, basi sterili satis magna, fibrillis nullis, trama compacta, sporis globosis echinatæ.

Hab. On sandy ground, *Archer.*

Obovate, ¼ inch high. *Peridium* very thin, passing into a thick sterile base, from which proceeds a little

down, binding the sand together without any decided filaments. *Trama* compact. *Spores* globose, $\frac{1}{1200}$ inch across, strongly echinulate.—This agrees with *Hydnangium* in the trama separating in the centre, in consequence of its compact structure, and with *Octaviania* in its sterile base. There is only a single specimen, much eaten by insects.

Gen. XXXV. LYSURUS, *Fr.*

Receptaculum sursum divisum in lacinias æquales integras l. emarginatas, apicibus liberis.

This genus is distinguished from *Clathrus* by the free apices of the laciniæ, and from *Aseroë* by their not being deeply bifid. (Name from λυω, *to loosen*, and ουρα, *a tail;* from the free divisions.)

1. **Lysurus Archeri** (Berk.). (Tab. CLXXXIV.)
Hab. On the ground, *Archer.*

Plate CLXXXIV. Fig. 1, young plant, and volva of old; 2, expanded plant; 3, laciniæ:—*all nat. size;* 4, transverse section of lacinia; 5, tips of ditto; 6, surface of ditto; 7 and 8, threads of structure; 9, spores:—*all magnified.*

Gen. XXXVI. ILEODICTYON, *Tul.*

Volva universalis, globosa, intus gelatinosa. *Receptaculum* sessile, cancellatum, ramis late fistulosis nec porosis ilia mentientibus. *Hymenium* setis parieti interno adhærens.

Distinguished from *Clathrus* by the hollow branches of the receptacle. (Name from ειλεος, *an intestine*, and δικτυον, *a net.*)

1. **Ileodictyon gracile** (Berk. in Lond. Journ. Bot. iv. p. 69).
Hab. On the ground (May), *Gunn, Archer, etc.* (Eaten when young.)

Gen. XXXVII. GEASTER, *Mich.*

Peridium duplex; exterius discretum, persistens, radiis stellatis expansis dehiscens.

Distinguished from other Puff-balls by their radiate external peridium. (Name from γη, *the earth*, and αστηρ, *a star.*)

1. **Geaster tenuipes** (Berk. in Hook. Lond. Journ. Bot. vi. p. 576). (Tab. CLXXXIII. Fig. 9.)
Hab. On the ground, *Gunn.*

Plate CLXXXIII. Fig. 9, plant, *nat. size; a*, orifice, *magnified.*

2. **Geaster Archeri** (Berk.); saccatus, peridii exterioris flaccidi laciniis acuminatis, interiore sessili, ore plicato. (Tab. CLXXXIII. Fig. 9 *bis.*)
Hab. On the ground, *Archer.*

Outer peridium split halfway down into about seven acuminate laciniæ, so as to form a deep sac, in which the inner perfectly sessile peridium is sunk; orifice plicate, but less so than in *G. striatus*, not rising from a distinct orbicular disc.—This differs from the small form of *G. striatus* in the perfectly sessile inner peridium, the less regularly plicate orifice, and the saccate outer peridium. It is a small species, scarcely exceeding an inch in diameter when dry. It differs from *G. saccatus* in the nature of the orifice.—Plate CLXXXIII. Fig. 9 *bis*, plant, *nat. size.*

3. **Geaster saccatus** (Fr. Syst. Myc. iii. p. 16).
Hab. On the ground, *Gunn, Archer, etc.*

4. **Geaster fimbriatus** (Fr. Syst. Myc. iii. p. 16).

HAB. On the ground, *J. D. H.*

5. **Geaster australis** (Berk.); peridio exteriori rigido in lacinias plures ovatas semipartito, peridio interiori omnino sessili, ore subindeterminato, ciliato-dentato.

HAB. On the ground, *Archer.* (TAB. CLXXXIII. Fig. 10.)

Outer peridium rigid, cleft halfway down into about six ovate laciniæ; *inner peridium* perfectly sessile; *orifice* distinctly ciliate, split into several teeth. *Spores* dark, even, about $\frac{1}{5000}$ inch across.—Resembling *G. limbatus*, but the peridium is perfectly sessile. From *G. rufescens* it is distinguished by its distinctly ciliate orifice, and from *G. fimbriatus* by its rigid outer peridium. When expanded it is about 2 inches across.—PLATE CLXXXIII. Fig. 10, plant, *nat. size.*

Gen. XXXVIII. BOVISTA, *Dill.*

Peridium papyraceum, persistens, cortice discreto demum secedente. *Sporæ* pedicellatæ.

The distinct outer peridium and pedicellate spores distinguish this from common Puff-balls. One species only occurs in Tasmania, which is nearly allied to a European species, with similarly coloured spores. (Name Latinized from the German, *bofist*, a puff-ball.)

1. **Bovista lilacina** (Mont. et Berk. in Hook. Lond. Journ. Bot. iv. p. 64).

HAB. On the ground, *Gunn.*

Gen. XXXIX. LYCOPERDON, *Tourn.*

Peridium membranaceum, flaccescens aut superne evanescens, cortice adnato subpersistente, in squamas l. verrucas varias abeunte. *Capillitium* molle, basi sterili peridioque adnatum.

The species of this genus are for the most part widely diffused and very variable. The spores are pedicellate in one or two species. (Name from λυκος, *a wolf*, and περδω, in allusion to the ancient notion as to their origin.)

1. **Lycoperdon pyriforme** (Schæff. t. 189).

HAB. On the ground, *Archer.*

2. **Lycoperdon gemmatum** (Fr. Ep. p. 36).

HAB. On the ground, *Gunn, Archer, etc.*

3. **Lycoperdon Gunnii** (Berk.); sessilis, subglobosa, minutissime stellato-verrucosa, columella brevi, sporis longe pedunculatis.

HAB. In pastures, New Norfolk, June, *Gunn.*

1–2 inches across, subglobose, olive. *Inner coat* shining, clothed with very minute stellate warts. *Columella* short. *Spores* globose, smooth, bright-olive, $\frac{1}{6000}$ inch long, supported on a peduncle three times their own diameter.

4. **Lycoperdon glabrescens** (Berk.); breviter pedunculatum, subhemisphæricum, umbrinum, ciliato verrucosum, glabrescens, capillitio sporisque pedunculatis umbrinis, pedunculo intus subviolaceo, ore conico.

HAB. On sandy ground, Oct. 1845, *Gunn.*

Subhemispherical, $1\frac{1}{2}$ inch across, umber, plicate below, clothed with minute starry warts above, gradually becoming smooth. *Stem* short, sending out two or three fibrous roots, cellular within and tinged with violet. *Columella* indistinct. *Capillitium* and globose pedunculate spores, which are $\frac{1}{5000}$ inch across, umber; mouth conical. *Peduncles* twice as long as the spores.

5. **Lycoperdon australe** (Berk.); sessile, radicans, globoso-depressum, minute aculeato-verrucosum, glabrescens, strato sterili parvo l. obsoleto, sporis capillitioque umbrinis, ore demum conico aperto.

HAB. On the ground, *J. D. H.*, *Gunn.*

This was sent under the same number with *L. glabrescens*, which it much resembles, but the barren stratum is small or obsolete, and if present differently coloured. The spores are not pedunculate, and are rather smaller.

Gen. XL. SCLERODERMA, *P.*

Peridium firmum, irregulariter l. stellatim dehiscens. *Flocci* peridio undique adnati, vacuolis immixtis minutis in quibus glomeruli sporarum apicibus floccorum oriundarum absque peridiolo nidulantur.

Resembling Truffles, especially when growing in sand, but differing very materially in structure. (Name from σκληρος, *hard*, and δερμα, *skin.*)

1. **Scleroderma Geaster** (Fr. Syst. Myc. p. 46).

HAB. On the ground, *Archer.*

Gen. XLI. MITREMYCES, *Nees.*

Peridium externum, corneum, ore determinato dentibus squamæformibus coloratis clauso, velum ruptum cartilagineum; interius sacciforme, discretum, minutum, ex ore suspensum.

A very curious genus of plants, occurring in the United States, the Himalayas, etc., but not in Europe. (Name from μιτρα, *a bonnet*, and μυκης, *a fungus;* in allusion to the calyptriform deciduous veil.)

1. **Mitremyces fuscus** (Berk. in Ann. Nat. Hist. iii. p. 325).

HAB. On the ground, *Gunn, Archer, etc.*

Gen. XLII. MESOPHELLIA, *Berk.*

Peridium crassum, coriaceum, substratosum, capillitium fasciculato-anastomosans ad columellam centralem suberosam radians. *Flocci* flexuosi. *Sporæ* breviter fusiformes, utrinque obtusiusculæ.—Genus *Cyclodermati*, Klotzsch, affine. Species unica hypogæa.

(Name from μεσος, *middle*, and φελλος, *cork.*)

1. **Mesophellia arenaria** (Berk. in Linn. Tr. xxii. p. 131. t. 25 C).

HAB. In the sandy soil, *Archer.*

From $\frac{3}{4}$–1 inch across, elliptic, somewhat depressed, subterraneous, clothed externally with white flocci, which attach themselves to little grains of sand. After the external down has been removed, in old specimens dark branched veins are seen to run over the peridium, without however giving off free bundles of threads, as in *Hysteromyces. Peridium* single, coriaceous, apparently consisting of several closely compacted strata, like wasp pasteboard. *Flocci* pinkish-grey, radiating in little fascicles from the peridium to the large central corky columella. *Spores* fusiform, short, slightly obtuse at either end, $\frac{1}{3350}$ of an inch long, of the same colour as the flocci.

This genus approaches close to *Cycloderma*, Klotzsch, but there is no inner peridium; the columella is not attached, and the spores are fusiform instead of globose. It is a most interesting addition to Fungi, and, like *Cycloderma*, connects *Trichogastres* with *Myxogastres*. The early condition of the plant is however quite unknown. The colour of the spores reminds one of *Lycogala*, and the veins of the peridium of *Hysteromyces.*

Gen. XLIII. ÆTHALIUM, *Ll.*

Peridium indeterminatum, membranoso-cellulare, fragile, fatiscens, extus strato floccoso evanescente corticatum, intus e floccis in strata membranacea coalitis cellulosum.

The only species is universally distributed, and is the pest of hothouses, from its abundant dusty spores. (Name from *αιθαλη, soot.*)

1. **Æthalium septicum** (Fr. Syst. iii. p. 93).

HAB. Amongst fallen leaves, *Gunn.*

Gen. XLIV. DIDERMA, *Pers.*

Peridium duplex, exterius crustaceum, discretum, glabrum, fragile, dehiscens; interius tenerrimum, membranaceum, evanescens. *Flocci* vagi, versus basin adnati, aut sæpius columellæ affixi interque sporas compactas repentes, raro latentes.

The only Tasmanian species in the collection is one of the commonest European forms. Probably others will reward future researches. (Name from *δις, double,* and *δερμα, a skin.*)

1. **Diderma vernicosum** (Pers. Syn. p. 165).

HAB. On sticks, *Archer.*

Gen. XLV. DIDYMIUM, *Schrad.*

Peridium membranaceum, tenue, irregulariter dehiscens aut fatiscens, tectum cortice (peridio externo non discreto) adnato in squamulas furfuraceas aut villum farinosum mox fatiscente. *Flocci* vagi, peridio adnati, inter sporas repentes.

Here again we have one of the commonest European forms. (Name from *διδυμος, double.*)

1. **Didymium costatum** (Fr. Syst. Myc. iii. p. 118).

HAB. On sticks, moss, etc., *Archer.*

The stem is longer than in the state described by Fries, and the peridium umbilicate. *Columella* white; *flocci* dark.

Gen. XLVI. PHYSARUM, *Pers.*

Peridium simplex, membranaceum, nudum, irregulariter dehiscens. *Columella* nulla. *Sporæ* floccis peridio adnatis intertextæ.

The perfect, simple, delicate peridium, combined with the absence of a columella, at once characterize this genus. The Tasmanian representatives are altogether European. (Name from *φυσαω, to puff up.*)

1. **Physarum nutans** (Pers. Syn. p. 203).

HAB. On *Sterea*, etc., *Archer.*

Peridium white. *Stem* tawny.

2. **Physarum hyalinum** (Pers. Syn. p. 170).

HAB. On moss, etc., *Archer.*

The peridium is globose, and the stems pale, but of the same nature as those of *P. hyalinum*, though agreeing in colour with those of *P. utriculare*. The two species are probably mere forms of one. I have, in fact, undoubted *P. hyalinum*, from Fries, marked *P. utriculare*. Both belong to the genus *Badhamia*, should it be found that it is really distinct from *Physarum*, or, in other words, if *Physarum* has ever solitary spores.

Gen. XLVII. CRATERIUM, *Trentepohl.*

Peridium simplex, operculatum. *Capillitium* e floccis subloculosum.

A very curious genus, confined to temperate regions, remarkable for its operculum and peculiar habit. (Name from *κρατηρ, a goblet.*)

1. **Craterium minutum** (Fr. Syst. Myc. iii. p. 151).

HAB. On grass, *Archer.*

Gen. XLVIII. STEMONITIS, *Gled.*

Peridium simplex, tenuissimum, membranaceum, fugax. *Capillitium* determinatum, *stipiti* intranti adnatum. *Flocci* reticulati.

The genus *Stemonitis* is a columellate *Physarum.* Its species are mostly widely diffused, and some flourish both in hot and temperate regions. One Tasmanian form is remarkable for its rough spores. (Name from *στημων, a thread or stem.*)

1. **Stemonitis fusca** (Roth, Germ. i. p. 448).

HAB. On dead wood, *Gunn.*

2. **Stemonitis oblonga** (Fr. Syst. Myc. iii. p. 159).

HAB. On decayed wood, *Archer.*

3. **Stemonitis echinuluta** (Berk.); peridio globoso columbino-chalybeo, stipite valido aterrimo sursum attenuato semipenetrante, capillitio pallido globoso, sporis magnis eleganter echinulatis.

HAB. On moss, *Archer.*

Peridium globose, very thin, showing dove-like prismatic hues, thicker and persistent below. *Stem* longer than the peridium, very dark, stout, attenuated upwards, passing halfway into the cavity of the peridium. *Capillitium* compact, growing from the columella. *Spores* $\frac{1}{1500}$ inch across, beautifully echinulate.—Allied to *S. arcyrioides*, but remarkable for its stout stem and large spores.

Gen. XLIX. TRICHIA, *Hall.*

Peridium simplex. *Columella* nulla. *Capillitium* elasticum, floccis vascularibus.

The spiral threads distinguish this from all *Myxogastres.* The species are for the most part widely diffused, but, besides common forms, Tasmania has two very distinct species. (Name from *θριξ, a hair.*)

1. **Trichia rubiformis** (Pers. Syn. p. 176).

HAB. On dead wood, *Archer.*

2. **Trichia metallica** (Berk.); peridio lentiformi fulvo metallicis coloribus ornato subtus umbilicato, stipite brevi cylindrico carneo, floccis rectis radiantibus sporisque incarnato-fulvis.

HAB. On dead wood, *Archer.*

Peridium lentiform, tawny, adorned with various metallic tints, frequently disposed in little specks like granulations, flattened or umbilicate beneath. *Stem* short, cylindrical, flesh-coloured. *Flocci* slender, radiating. *Spores* $\frac{1}{2500}$ inch across, reddish-ochre, like the flocci, inclining to tawny.—The most beautiful of all the *Trichiæ*, though small, and singularly distinct. Its nearest ally is *Trichia fallax.*

3. **Trichia chrysosperma** (DC. Fl. Fr. ii. 250).

HAB. On dead wood: Sassafras Valley, *Archer, J. D. H.*

The stem is sometimes far more distinct than usual.

4. **Trichia varia** (Pers. Syn. p. 181).

HAB. On dead wood and moss, *Archer.*

5. **Trichia verrucosa** (Berk.); subcæspitosa, peridio turbinato sordide ochraceo, stipite debili filiformi decumbente sporis magnis verrucosis.

HAB. On charred wood, *Archer.*

Somewhat crowded or scattered. *Peridia* dull-ochre, turbinate, seated on a filiform, weak, decumbent stem. *Spores* globose, verrucose, $\frac{1}{1750}$ inch across, yellow, as well as the capillitium.—This species, which at first sight resembles *Trichia varia*, is at once distinguished by its large verrucose spores.

Gen. L. PERICHÆNA, *Fr.*

Peridium simplex, sæpe circumscissum. *Flocci* rari, sporis immixti.

This genus resembles *Trichia*, but is at once distinguished by the absence of vascular hairs. (Name from *περι, around,* and *χαινω, to gape.*)

1. **Perichæna contorta** (Fr. Syst. Myc. iii. p. 192).

HAB. On dead wood, *Archer.*

Paler than usual, and with no trace of capillitium.

Gen. LI. LICEA, *Schrad.*

Peridium tenue, irregulariter dehiscens. *Sporæ* laxæ. *Flocci* nulli.

Distinguished by the utter absence of flocci from all *Myxogastres*, except one or two of the more obscure *Perichænæ*. The only Tasmanian species is a strictly European form. (Origin of name unknown.)

1. **Licea fragiformis** (Fr. Syst. Myc. iii. p. 196).

HAB. On dead wood: Penquite, *Gunn.*

Gen. LII. CYATHUS, *Pers.*

Peridium primum obovatum vel fusiforme, obtusum, apice demum centrali dehiscens, et velo candido tympani instar clausum, e membranis tribus arcte invicem applicatis compositum. *Sporangia* plana, umbilicata, funiculo parietibus addicta. *Sporæ* sporophoro innatæ.

Of this curious genus there is but one Tasmanian species, identical with one of the two New Zealand forms, and resembling the European *C. vernicosus*. (Name from *cyathus*, a cup.)

1. **Cyathus Colensoi** (Berk. in Fl. N. Zeal. p. 192).

HAB. On cowdung, etc., *Gunn, Archer.*

Gen. LIII. SPHÆROBOLUS, *Tode.*

Peridium duplex, interius demum elastice inversum et sporangium solitarium globosum ejiciens. *Sporæ* sporophoro adnatæ.

Distinguished from *Cyathus* and its allied genera by the solitary sporangium which is shot out of the peridium, by the inversion of the inner coat, like a shell out of a mortar. The structure of the sporangia is essentially the same. (Name from *σφαιρα, a ball,* and *βαλλω, to cast.*)

1. **Sphærobolus stellatus** (Tode, Meck. i. p. 43).

HAB. On decayed wood, *Archer.*

Gen. LIV. SPHÆRONEMA, *Fr.*

Perithecium liberatum vel omnino liberum. *Sporæ* demum exsudantes apicique perithecii adhærentes.

This, like other genera of sporiferous *Sphæria*, is composed of more or less doubtful species, inasmuch as they may be spermatiferous forms of higher genera. Till more however is known on the subject, it is needful to retain them in their appointed place; and even after due eliminations have been made, it is very possible that there may still be really autonomous productions amongst them. (Name from *σφαιρα, a globe*, and *ναιμα, gelatine.*)

1. **Sphæronæma rufum** (Fr. Syst. Myc. ii. p. 536).

HAB. On exposed wood, *Archer.*

The specimens on analysis exhibit the structure of a *Sclerotium*, as in fact do many true *Sphæriaceæ* in a young state. It is curious that this is the only production of the group which has been collected in Tasmania. It is scarcely however credible that such productions as *Phoma*, *Leptostroma*, etc., should be entirely wanting.

Gen. LV. ÆCIDIUM, *Gmel.*

Sporæ concatenatæ, in soros congestæ, peridio membranaceo demum lacerato-aperto cinctæ.

The delicate peridium and the bright spores which it encloses make these little parasites extremely pretty objects. The species are however comparatively rare in the southern hemisphere. Two of the three Tasmanian species appear to be perfectly distinct from those of Europe. (Name from *αικιον, a wheal*, and *ειδω, to resemble.*)

1. **Æcidium soleniæforme** (Berk.); maculis orbicularibus fuscis, peridiis cylindricis elongatis candidis apice laciniato-radiatis, sporis subangularibus aurantiacis.

HAB. On pods of *Goodia latifolia*, *Archer.*

Forming round brown spots. *Peridia* crowded, central, white, nearly a line long, irregularly divided above. *Spores* mostly angular, often 5–6-angled, about $\frac{1}{1000}$ inch across; border of cells of the peridium striate.—Resembling *Æcidium Berberidis.*

2. **Æcidium cystoseiroides** (Berk.); pustulatum, folia deformans, peridio immerso, sporis aurantiacis subangulatis.

HAB. On *Opercularia varia*, *J. D. H.*, *Gunn.*

Forming little pustules on the upper side of the leaves, which it swells out so as to look like the fruit of a *Cystoseira*. *Peridia* immersed within the pustules, bursting at the apex. *Spores* rather angular, orange, very minutely echinulate, at first forming necklaces.

3. **Æcidium ranunculacearum** (DC. Fl. Fr. vi. p. 97).

HAB. On a small species of *Ranunculus*: St. Patrick's River, Nov. 1844, *Gunn.*

Gen. LVI. USTILAGO, *Lk.*

Receptaculum effusum, e cellulis minimis irregularibus compositum. *Sporæ* minores simplices, pulveraceæ.

Most of the species have loose soot-like spores, but in a few they are closely compacted. (Name from *ustus*, burnt.)

1. **Ustilago solida** (Berk.); compacta, globosa, atra, sporis subglobosis lævibus. (TAB. CLXXXIII. Fig. 11.)

HAB. On *Chætophora imberbis*: Penquite, Dec. 1845, *Gunn.*

Forming little, globose, pill-shaped, compact bodies, scarcely a line across, jet-black. *Spores* aggregate, subglobose, $\frac{1}{1250}$ inch in diameter, mostly smooth, but rarely exhibiting two or three flat vesicular prominences, mixed with shreds of tissue and threads.—This species connects *Ustilago* and *Sporisporium*.—PLATE CLXXXIII. Fig. 11, plant, *nat. size*; *a*, group of spores, *magnified*; *b*, separate spores, *highly magnified.*

Gen. LVII. PILACRE, *Fr.*

Peridium capitatum, supra membranaceum, tenerrimum, fatiscens. *Sporæ* subglobosæ, in strato supero peripherico coacervatæ.

Small Fungi, with the habit of *Onygena*, but allied to the Moulds. (Name from πιλος, *a hat*, and ακρον, *the top of anything*.)

1. **Pilacre divisa** (Berk. in Fl. N. Zeal. p. 197).

HAB. On dead wood, *Archer*.

The specimens are imperfect and undivided, but they appear to belong to the same species with those from New Zealand.

Gen. LVIII. ISARIA, *Hill.*

Receptaculum elongatum, floccosum, floccis sporiferis rectis tectum. *Sporæ* nudæ.

Isariæ are essentially compound *Sporotricha*, and, like them, are for the most part mere conditions of higher Fungi. Some however are autonomous. (Name from ισος, *equal;* from the equal height of the individual plants of the original species.)

1. **Isaria radians** (Berk.); cervino-grisea, orbicularis, ramosa, undique floccis verticillatis vel subdichotomis vestita, sporis ellipticis minimis.

HAB. On bark, *Archer*.

Forming patches $\frac{3}{4}$–1 inch broad. *Receptacle* branched, radiating, composed of threads, the free portions of which are verticillate or subdichotomous, each branchlet being terminated by an elliptic spore $\frac{1}{6000}$ inch long.—This species resembles *Isaria umbrina*, Pers., but the decidedly branched receptacle and radiating patches easily distinguish it. It is not accompanied by any *Sphæria*, but whether autonomous or not I am unable to say.

Gen. LIX. TRICHODERMA, *Pers.*

Peridium indeterminatum, e floccis ramosis septatis contextum, demum in medio evanescens. *Sporæ* minutæ, siccæ, in disco conglobatæ.

The species are probably not autonomous, and resemble collapsed patches of Mould. (Name from θριξ, *a hair*, and δερμα, *a skin.*)

1. **Trichoderma viride** (Pers. Syn. p. 230).

HAB. On dead bark, *Archer*.

Gen. LX. VERTICILLIUM, *Nees.*

Flocci ramosi, ramis verticillatis apice monospermis. *Sporæ* simplices.

Little Moulds, known by their distinctly whorled branches. Of exotic species very little is known. (Name from *verticillus*, a whorl.)

1. **Verticillium niveum** (Berk.); candidum, ramosum, ramulis basi incrassatis breviusculis, sporis oblongis.

HAB. On dead Agarics, *Archer*.

Snow-white, delicate, branched. *Whorls* consisting of about three branchlets, which are acute above, and thickened below. *Spores* oblong, $\frac{1}{4000}$ inch long.—Differs from *V. agaricinum* in its shorter branches, more delicate habit, and far smaller spores.

Gen. LXI. POLYACTIS, *Lk.*

Flocci decolorantes, subfusci, rami versus apicem cymosi l. paniculati. *Sporæ* simplices.

Brownish Moulds, at first white, irregularly branched, with the ramuli mostly near the apex, and forming little cymes or panicles, but not verticillate. (Name from πολυς, *many*, and ακτις, *a ray.*)

1. **Polyactis vulgaris** (Lk. Obs. i. p. 14. f. 22).
HAB. On dead twigs, *Archer.*

The few perfect individuals that I have seen are but slightly divided above, but the plant seems a mere form of the common *P. vulgaris.* The spores are slightly obovate, and about $\frac{1}{3500}$ inch long.

Gen. LXII. RHINOTRICHUM, *Corda.*

Flocci sursum incrassati, spiculiferi, spiculis sporiferis. *Sporæ* subglobosæ.

Distinguished from *Botrytis* by the swollen tips of the threads, which are studded with the spores. (Name from ρινη, *a file.*)

1. **Rhinotrichum microsporum** (Berk.); filis agglutinatis, clavulas subcylindricas efformantibus, apicibus cylindrico-clavatis, sporis globosis minutis.
HAB. On soil, *Archer.*

White. *Mycelium* at first creeping, then agglutinated into little fascicles, so as to form short Isariæform clubs, but frequently barren; ultimate flocci cylindrico-clavate, obtuse, studded with very minute spicules, each of which bears a globose spore $\frac{1}{5000}$ inch in diameter.—This has the habit of an *Isaria*, and is moreover distinguished by its minute spores.

Gen. LXIII. MORCHELLA, *Dill.*

Receptaculum clavatum l. pileatum. *Hymenium* costis elevatis lacunosum. *Asci* fixi.

Morels occur in many parts of the world, and the common species is collected in the northern Himalayas, for food, as it is in Europe. I have seen but a single immature Tasmanian specimen. (Name Latinized from the German, *Morchel.*)

1. **Morchella esculenta,** δ *conica* (Fr. Syst. Myc. ii. p. 7).
HAB. On the ground, *Archer.*

Gen. LXIV. HELVELLA, *L.*

Receptaculum pileatum, centro suffultum, deflexum. *Hymenium* læve, superum. *Asci* fixi.

Distinguished at once from Morels by their lobed, even receptacle. Some of the species are esculent, as is probably the Tasmanian form. (Name applied to some Fungus or esculent vegetable by Cicero.)

1. **Helvella monachella** (Fr. Syst. Myc. ii. p. 18).
HAB. In the valley on the north side of Cuming's Head, about halfway up, Nov. 1855, *Archer.*

This is rather larger than the European form, but differs in no other respect. The pileus is dark-brown, lobed, deflexed, and adnate; the stem pale rufous, and smooth.

Gen. LXV. LEOTIA, *Hill.*

Receptaculum pileatum, orbiculare, margine revolutum, supra margineque fructiferum. *Hymenium* læve. *Asci* fixi.

The smooth, orbicular, revolute head, with its tumid margin, characterizes this genus. The typical species has an extremely wide range. (Name probably from λειος, *smooth*.)

1. **Leotia lubrica** (Pers. Syn. p. 613).

HAB. On the ground, *Archer*.

Gen. LXVI. MITRULA, *Fr.*

Carnoso-mollis, capitatus. *Receptaculum* clavatum, inflatum, a stipite discretum. *Asci* fixi.—Fungi *læte colorati*.

Distinguished principally from *Geoglossum* by their brighter colours and different habit. (Name, a diminution of *Mitra*.)

1. **Mitrula vinosa** (Berk.); vinoso-purpurea, gracilis, lineari-clavata, sporidiis lineari-oblongis minutis curvis.

HAB. On dead wood, *Archer*.

About 2 inches high, of a vinous-purple. *Stem* filiform, smooth, swelling above into a cylindrical head. *Sporidia* linear-oblong, curved, $\frac{1}{3000}$ inch long.—Closely allied to *Mitrula Berterii*, M., which is of a deep-brown tint, and has the sporidia scarcely curved.

Gen. LXVII. GEOGLOSSUM, *Pers.*

Carnosum. *Receptaculum* simplex, clavæforme, stipitatum. *Hymenium* clavam ambiens. *Asci* elongati.—Fungi *saturate colorati*.

The more typical species are very distinct from *Mitrula*; others are almost confluent with that genus. The only Tasmanian species belongs to a European type, and is very widely diffused. (Name from γη, *the earth*, and γλωσσα, *a tongue*.)

1. **Geoglossum glabrum** (Pers. Syn. p. 488).

HAB. On the ground, amongst Moss, and on Fern-stems, *Archer*.

Gen. LXVIII. PEZIZA, *Dill.*

Receptaculum carnosum vel subcarnosum, marginatum, cupulæforme, primo clausum, subtus sterile. *Asci* fixi.

This large genus is amply represented in Tasmania, and under a great variety of forms, which belong, however, to European types. (Name from *Pezica*, a term used by Pliny for stemless Fungi.)

1. **Peziza aurantia** (Pers. Obs. ii. p. 76).

HAB. On the ground, *Gunn*.

2. **Peziza cochleata** (Huds.; Fr. Syst. vol. ii. p. 50).

HAB. On the ground, *J. D. H.*

Very irregular, so as to look sometimes like a *Psilopezia*.

3. **Peziza recurva** (Berk.); cupula subsessili undulata convexa recurva badia, sporidiis globosis granulatis. (TAB. CLXXXIII. Fig. 12.)

HAB. On the ground, *Archer*.

Cup nearly sessile, dark-bay, $\frac{1}{3}$–$\frac{3}{4}$ inch across, inclined to be turbinate, undulated and arched above, with the borders recurved. *Asci* linear, obtuse. *Sporidia* globose, granulated, $\frac{1}{1500}$ of an inch in diameter.—When moistened,

this *Peziza* is coriaceous, and looks like an *Endocarpon.*—Plate CLXXXIII. Fig. 12, plant, *nat. size; a*, asci, and *b*, sporidia, *magnified.*

4. **Peziza fusispora** (Berk. in Hook. Lond. Journ. vol. v. p. 5).

Hab. On the ground, *Gunn.*

5. **Peziza Archeri** (Berk.); sessilis, cinnabarina, primum concava, demum expansa, undulata, margine libero.

Hab. On dead leaves of some succulent plant, *Archer.*

Bright-crimson. *Cup* $\frac{1}{4}$ inch across, sessile, at first depressed, then expanded, undulated and umbilicate, paler below, slightly tomentose. *Asci* cylindrical. *Sporidia* globose, $\frac{1}{3500}$ inch across, with a large nucleus.—The fruit is just like that of *P. endocarpoides*, B. The species is almost intermediate between the sections *Humaria* and *Mollisia.* The sporidia vary greatly in size in the same ascus.

6. **Peziza carbonigena** (Berk.); aurantiaca, gregaria, stipata, cupulis umbilicatis sessilibus flexuosis extus subtiliter granulosis.

Hab. On fragments of charcoal, *Archer.*

Crowded, about a line broad, not confluent, orange, umbilicate, subturbinate, slightly granulated externally. *Asci* linear, paraphyses clavate. *Sporidia* elliptic, $\frac{1}{1250}$ of an inch long.—This is not confluent like *P. omphalodes.* It has somewhat the habit of *P. glumarum*, Desm., but is far smaller.

7. **Peziza coccinea** (Jacq. Aust. t. 169).

Hab. On twigs, *Archer.*

8. **Peziza Eucalypti** (Berk.); pallide olivacea, cupula plana, margine pilis rigidis atro-purpureis ciliato, stipite cylindrico. (Tab. CLXXXIII. Fig. 13.)

Hab. On leaves of *Eucalyptus, Archer.*

Extremely minute, pale-olive. *Cup* turbinate, fringed with long, purple-brown hairs, supported by a cylindrical, distinct stem, which, like the cup, has a few scattered white flocci. *Asci* cylindrical. *Sporidia* oblong, subcymbiform, $\frac{1}{2500}$ of an inch long.—A very curious and distinct species, which in some respects may be compared with *P. misella*, Desm., though very different.—Plate CLXXXIII. Fig. 13, single plant, *magnified; a*, ascus, and *b*, sporidia, *magnified.*

9. **Peziza stercorea** (Pers. Obs. ii. p. 89).

Hab. On dung, *Archer.*

10. **Peziza scutellata** (L. Suec. p. 458).

Hab. On dead wood, *Archer.*

11. **Peziza virginea** (Batsch.; Fr. Syst. Myc. vol. ii. p. 90).

Hab. On dead wood, *Archer.*

12. **Peziza lachnoderma** (Berk.); cupula subhemisphærica breviter stipitata extus nivea tomentosa intus miniata, sporidiis filiformibus curvatis.

Hab. On dead bark, *Archer.*

Cup 2 lines across, subhemispherical, supported by a very short stem, white and beautifully downy externally, within pale-scarlet. *Asci* long, clavate above. *Sporidia* linear, subfusiform, curved, $\frac{1}{1000}$ of an inch long.—This seems at first sight a large form of *P. calycina*, but the sporidia in that species are oblongo-elliptic, and only about half as long. I believe the sporidia in *P. bicolor*, to which the young plants bear much resemblance, are much shorter, but I have not seen them perfect.

13. **Peziza hyalina** (Pers. Syn. p. 655).

Hab. On dead wood, *Archer.*

14. **Peziza anomala** (Pers. Syn. p. 656).

HAB. On dead bark, *Archer*.

A form which approaches very near to *Solenia*. Where the cups are eaten off by insects, the appearance is exactly that of a *Polyporus*.

15. **Peziza epitephra** (Berk.); minuta, alba, hæmispherica vel subglobosa, insigniter cava, floccis crispis fuscis intertextis oriunda.

HAB. On the under side of fallen leaves, *Archer*.

White, minute, hemispherical or subglobose, hollow, scattered on a uniform brown stratum consisting of even, curled, brown threads.

16. **Peziza araneosa** (Berk.); cupulis primum subglobosis demum ex hemisphærico expansis sessilibus extus araneosis, floccis subtus super matricem repentibus oriundis, hymenio luteo-aurantiaco, sporidiis curvulis multinucleatis.

HAB. On dead wood, *Archer*.

Minute, at first globose, then hemispherical, with the border inflected, then expanded, white and byssoid externally, attached to the matrix by radiating byssoid flocci. *Hymenium* pale-orange. *Asci* clavate. *Sporidia* linear, curved, containing six or more nuclei, $\frac{1}{800}$ inch long.

17. **Peziza firma** (Pers. Syn. p. 658).

HAB. On dead wood, *Archer*.

18. **Peziza byssigena** (Berk.); ochracea, cupula concava, stipite elongato cylindrico subtiliter pruinoso e floccis intertextis radiantibus oriundo.

HAB. On a dead stick, *Archer*.

Cup $\frac{1}{2}$ a line broad, hyaline, ochraceous, regular, concave, subtremelloid, supported by a stout cylindrical stem about 1 line high, minutely pruinose, and springing from matted, radiating, pallid flocci. *Asci* clavate. *Sporidia* subelliptic or oblong, $\frac{1}{3000}$ inch long.—Allied to *P. lutescens*, Hedwig.

19. **Peziza ceratina** (Berk.); turbinata, stipitata, glabra, pallide fulvo-cornea, hymenio plano marginato.

HAB. On leaves of *Eucalyptus*, *Archer*.

Minute, not half a line high, of a clear, tawny horn-colour, turbinate, stipitate, smooth. *Hymenium* flat, with a narrow border. *Asci* rather large. *Sporidia* oblongo-clavate, pointed, $\frac{1}{1250}$ inch long.—This species is allied to *P. clavellata*, Desm., and *P. cyathoidea*, but more especially to *Helotium titubans*, Mont., a Chilian species, from all which it is quite distinct. The hymenium is perfectly flat when moistened.

20. **Peziza omnivirens** (Berk.); æruginosa, cupula breviter stipitata subturbinata, hymenio plano, sporidiis amplis.

HAB. On dead wood: Leith Creek, August, *Archer*.

Cup subturbinate, 2 lines across, dark verdigris-green. *Hymenium* plane. *Asci* lineari-clavate. *Sporidia* uniserial, oblong, obtuse at either end, subcymbiform, $\frac{1}{1250}$ inch long.—This bears the same relation to *P. versiformis* that *P. æruginea*, B., does to *P. æruginosa*. It is more regular, and the sporidia much larger. In *P. versiformis* the sporidia are $\frac{1}{2250}$ of an inch long, and much narrower in proportion.

21. **Peziza grata** (Berk.); cupula plana hyalina marginata breviter stipitata subaurantiaca, stipite pallidiori cylindrico quandoque compresso.

HAB. On dead, exposed wood, *Archer*.

Cup $\frac{1}{4}$ line across, concave, hyaline, of a dull-orange. *Stem* paler, compressed. *Sporidia* fusiform, $\frac{1}{1800}$ of an

inch long. *Endochrome* often retracted to either extremity.—Allied to *P. Colensoi*, Berk., but brighter in colour and with smaller spores. The cup is more concave in dried specimens. The stem is sometimes compressed from growing between the fibres of the wood.

22. **Peziza citrina** (Batsch. f. 218).
HAB. On dead wood, *Archer*.

Sporidia $\frac{1}{3000}$ inch long.

23. **Peziza nigripes** (Fr. Syst. Myc. ii. p. 132).
HAB. On dead wood, *Archer*.

24. **Peziza pateræformis** (Berk.); ochracea, cupula sessili sublobata concava subtus rugosiuscula subtiliter tomentosa, ascis linearibus, sporidiis oblongis utrinque attenuatis subcymbæformibus.
HAB. On wood overrun with Moss, *Archer*.

About 2 lines across, sessile, somewhat lobed, ochraceous, concave, beneath rather rugged, obscurely tomentose. *Asci* linear, elongated. *Sporidia* uniseriate, oblong, subcymbiform, attenuated at either extremity, sometimes subclavate, $\frac{1}{800}$ inch long.—Somewhat resembling *P. araneosa*, Bull, but allied to *P. citrina*.

25. **Peziza cinerea** (Batsch. f. 137).
HAB. On dead wood, *J. D. H., Archer*.

Gen. LXIX. PATELLARIA, *Fr.*

Receptaculum marginatum, patellæforme, semper apertum. *Hymenium* læve, persistens, sed ex apicibus ascorum aere adustis pulverulentum.

The plants belonging to this genus are morphologically Lichens, without crust. Owing to their persistent nature, the tips of the asci, as in *Lecidea*, etc., become carbonized. (Name from *patella*, a saucer.)

1. **Patellaria Tasmanica** (Berk.); sessilis, cupulis e concavo planis, hymenio e rufo nigro, sporidiis oblongis curvulis.
HAB. On dead wood, *Archer*.

Minute, at first subglobose, concave, then flat, with or without a border, externally black. *Disc* tinged with green and rufous, at length black. *Asci* clavate. *Sporidia* $\frac{1}{2000}$–$\frac{1}{2500}$ inch long, curved, narrow, oblong. *Endochrome* retracted to either extremity.—The disc, when moist, swells, and is of a pale-watery dingy-rufous.

Gen. LXX. ASCOBOLUS, *Pers.*

Omnia *Pezizæ* exceptis ascis dissilientibus.

A very curious genus, confined principally to the dung of various animals, though sometimes growing on wood. The sporidia are often beautiful objects under the microscope, from their amethyst tint. (Name from ασκος, *a vessel*, and βαλλω, *to cast*.)

1. **Ascobolus Archeri** (Berk.); cupula undulata sessili vinoso-fusca, sporidiis amethysteis eleganter granulatis.
HAB. On charcoal, *Archer*.

Cups $1\frac{1}{2}$ lines across, orbicular, sessile, undulated, vinous-brown. *Asci* clavate. *Sporidia* at first elliptic, even, colourless, binucleate, $\frac{1}{2000}$ inch long, then more elongated, $\frac{1}{1250}$–$\frac{1}{1500}$ inch long, amethyst-coloured, elegantly granulated.—Except the two forms of spores were seen in the same individual cup with intermediate states, it might easily be supposed that there were two species.

Gen. LXXI. BULGARIA, *Fr.*

Receptaculum elasticum, tremelloideum, turbinatum. *Hymenium* læve, persistens.

Resembling *Exidia*, but distinguished at once by the presence of asci. The species are few in number, and two at least are widely diffused. (Name from *bulga*, a sac.)

1. **Bulgaria sarcoides** (Fr. Syst. Myc. ii. p. 168).

HAB. On dead branches, *Archer*.

Gen. LXXII. CYTTARIA, *Berk.*

Receptaculum commune, gelatinoso-cartilagineum; *cupulis* in globum connatis, demum apertis; *ascis* amplis.

This curious genus is parasitic on living trees of the different species of evergreen beech, and one forms a principal part of the food of the Fuegians. The Tasmanian species is doubtless equal in its nutritive qualities to the Fuegian. (Name from *κυτταρος, a honeycomb.*)

1. **Cyttaria Gunnii** (Berk. in Hook. Lond. Journ. Bot. vi. p. 576).

HAB. On living branches of *Fagus Cunninghamii, Gunn, Archer.*

Gen. LXXIII. STICTIS, *Pers.*

Receptaculum obsoletum. *Hymenium* læve, determinatum, matrici immersum, et ab ea marginatum primoque velatum.

Lichenose *Pezizæ*, consisting almost entirely of hymenium. (Name from *στικτος, dotted.*)

1. **Stictis radiata** (Pers. Obs. ii. p. 73).

HAB. On dead wood, with *Marasmius epimyces*, and, like it, accompanying some *Thelephora, J. D. H.*

Gen. LXXIV. MYLITTA, *Fr.*

Peridium induratum, internam massam compactam siccam subcorneam heterogeneam venosam corticans.

It is probable that the original species of Fries is merely one of those singular tubers which grow on the roots of Leguminous plants. Recent specimens of the Australian plant, which is used as an article of food, exhibit something like asci, as represented in Corda's figure. There can be little doubt that the plant is autonomous. (Name from *Mylitta*, a heathen deity.)

1. **Mylitta australis** (Berk. in Ann. Nat. Hist. iii. p. 325; Corda, Ic. fasc. vi. t. 9. f. 93).

HAB. Subterraneous, *Gunn.*

Gen. LXXV. CORDYCEPS, *Fr.*

Stroma elevatum, carnosum, sæpius stipitatum, lætius coloratum. *Perithecia* peripherica, tenera. *Sporidia* longissima, endochromata plurima, plerumque dissilientia.

Most of the species of this curious genus grow on insects, and one or two on Ergot. The insect species are usually inhabitants of warm climates. The Tasmanian parasite is closely allied to the well-known insect plant of New Zealand, but very distinct. (Name from *κορδυλη, a club.*)

1. **Cordyceps Gunnii** (Berk.).—Sphæria Gunnii, *Berk. in Hook. Lond. Journ. Bot.* vi. *p.* 577.
HAB. On the pupa of some *Hepialus, Gunn.*

The New Zealand species grows on the larva (not the pupa) of an insect of the same genus. Ergot occurs on Grasses in Tasmania, but it is uncertain to what species of *Cordyceps* it owes its origin.

Gen. LXXVI. HYPOCREA, *Fr.*

Stroma horizontale, carnosum vel subgelatinosum, interdum obsoletum, ut plurimum lætius coloratum. *Perithecia* tenera. *Sporidia* plerumque indefinita.

Hypocrea is to *Cordyceps* what *Hypoxylon* is to *Xylaria*, containing those species whose stroma is horizontal, and not essentially vertical. Their bright colour at once distinguishes them, or, where that fails, the fleshy substance. (Name from *ὑπο, beneath,* and *κρεας, flesh.*)

1. **Hypocrea semiorbis** (Berk.).—Sphæria semiorbis, *Berk. in Hook. Lond. Journ. Bot.* ii. p. 146.
HAB. On dead wood, *Gunn.*

2. **Hypocrea rufa** (Fr. Summ. p. 383).
HAB. On dead wood, *Archer.*

3. **Hypocrea citrina** (Fr. Summ. p. 386).
HAB. On dead wood, *J. D. H., Archer.*

4. **Hypocrea tomentosa** (Fr. MSS.).
HAB. On the hymenium of *Polypori, Archer.*

Forming a white, delicate, tomentose stratum, without any very distinct stroma.

Gen. LXXVII. NECTRIA, *Fr.*

Perithecia libera vel mycelio l. stromati insidentia, tenera, læte colorata, verticalia. *Sporidia* ut plurimum octona, translucida.

Differing from the two foregoing genera in the free perithecia. (Name from *νηκτρις, a swimmer;* in allusion to the fluxile contents of the perithecia.)

1. **Nectria agaricicola** (Berk.); cinnabarina, peritheciis ovatis acutis lævibus, ascis cirrhiformibus longissimis, sporidiis filiformibus. (TAB. CLXXXIII. Fig. 14.)
HAB. On dead Agarics, *Archer.*

Gregarious on the stems, gills, etc., of Agarics. *Perithecia* ovate, acute, scarlet; walls vesiculo-fibrous. *Asci* extremely long. *Sporidia* very slender, filiform.—A splendid and highly curious species.—PLATE CLXXXIII. Fig. 14; *a*, group of perithecia; *b*, asci; *c*, part of ascus and sporidia:—*magnified.*

2. **Nectaria tephrothele** (Berk.); peritheciis sparsis coccineis ovatis, ostiolo papillæformi obscuro, sporidiis subfusiformibus quadri-nucleatis.
HAB. Parasitic on some species of *Hypoxylon, Archer.*

Bright-scarlet, studding the surface of the brown *Hypoxylon*. *Perithecia* scarlet, ovate; ostiolum papillæform, cinereous. *Asci* thicker in the middle. *Sporidia* biseriate, $\frac{1}{1500}$ inch long, at length containing four endochromes —Resembling *N. episphæria,* but differing in several particulars.

3. **Nectria coccinea** (Fr. Summ. p. 388).
HAB. On fallen branches, *Archer.*

The sporidia vary slightly in the two forms referred to this species. In the one they are subcymbiform, as in the European form, and $\frac{1}{2000}$ inch in length; in the other oblong, with the endochrome retracted to either end, and $\frac{1}{2250}$ inch long. I can see no external difference.

4. **Nectria fusarioides** (Berk.); pallide coccinea, peritheciis ovatis papillatis pruinosis in stromate semi-immersis, sporidiis oblongis curvulis.

HAB. On dead bark, *Archer.*

Pale-scarlet. *Stroma* bursting out in linear patches. *Perithecia* half-immersed, ovate, papillate, pruinose. *Sporidia* $\frac{1}{2000}$–$\frac{1}{2500}$ inch long, oblong, slightly curved.

5. **Nectria Tasmanica** (Berk.); cæspitosa, rubra, stromate pallido, peritheciis ovatis, ostiolo papillæformi sæpe e disco orbiculari oriundo, sporidiis cymbæformibus bi-quadrinucleatis.

HAB. On dead bark, *Archer.*

Scattered on a subhemispherical pale stroma, blood-red, but not bright. *Perithecia* rather large, ovate, either ending gradually in a papillæform orifice, or slightly truncate, with a central ostiolum. *Asci* linear. *Sporidia* uniseriate, subcymbiform, with from two to four nuclei or endochromes, $\frac{1}{1500}$ inch long.—In external appearance resembling Montagne's *N. discophora*, but with very different sporidia.

Gen. LXXVIII. XYLARIA, *Fr.*

Stroma clavatum, subsuberosum, demum ut plurimum friabile, nigrum. *Stipes* sæpe distinctus. *Perithecia* peripherica. *Sporidia* octona.

A large genus, containing many tropical forms, and some which are universally distributed, known by their dark colour and clavate or branched stroma. (Name from ξυλον, *wood.*)

1. **Xylaria Hypoxylon** (Fr. Summ. p. 381).

HAB. On dead wood, *Archer.*

2. **Xylaria corniformis** (Fr. Summ. p. 381).

HAB. On dead wood, *Gunn, Archer, etc.*, apparently very common.

Gen. LXXIX. PORONIA, *Fr.*

Stroma sessile l. pedunculatum, nigrum, sursum orbiculare, concavum, albo-velatum. *Perithecia* verticalia.

Distinguished by the cup-shaped body, in which the vertical perithecia are immersed. (Name from πορος, *a pore.*)

1. **Poronia punctata** (Fr. Summ. p. 382).

HAB. On dung, *Archer.*

The form figured by Sowerby.

Gen. LXXX. HYPOXYLON, *Bull.*

Stroma liberum, friabile, horizontale, nigrum. *Perithecia* peripherica, nigra. *Asci* perfecti. *Sporidia* octona.

Distinguished from *Xylaria* by the horizontal stroma. In a few species the perithecia are vertical, and the stroma almost obsolete. (Name from ὑπο, and ξυλον, *wood.*)

1. **Hypoxylon concentricum** (Fr. Summ. p. 384).

HAB. On dead wood, *Gunn, Archer, etc.*

2. **Hypoxylon coccineum** (Bull. p. 174).—Sphæria fragiformis, *Pers. Syn. p.* 9.
HAB. On dead branches, *Gunn, Archer.*

3. **Hypoxylon argillaceum** (Fr. Summ. p. 384).
HAB. On dead wood, *Archer.*

4. **Hypoxylon annulatum** (Mont. Fl. Chil. vii. p. 445. t. 10. f. 3).
HAB. On dead bark, *Archer.*

5. **Hypoxylon multiforme** (Fr. Summ. p. 384).
HAB. On dead wood and bark, *Archer.*

All the specimens belong to the effused form called by Fries β *granulosum.*

6. **Hypoxylon Archeri** (Berk.); aterrimum, peritheciis subglobosis truncatis rugosiusculis umbilicatis, ostiolo papillæformi, sporidiis brevibus.
HAB. On dead wood, *Archer.*

Densely crowded and confluent, black, rather minute, opaque or shining. *Perithecia* nearly globular, minutely rugulose, truncate, furnished above with a little shallow umbilicus, in the centre of which is the papillæform ostiolum. *Sporidia* short, cymbiform, $\frac{1}{2500}$ inch long.—Allied to *H. marginatum.*

7. **Hypoxylon nummularium** (Bull. t. 468. f. 4).
HAB. On fallen branches, *Archer.*

Gen. LXXXI. DIATRYPE, *Fr.*

Stroma innatum, nigrum; *peritheciis* verticalibus.

Distinguished from *Hypoxylon* by its innate, not freestroma. (Name from δια, *through,* and τρυω, *to perforate.*)

1. **Diatrype lata** (Fries, Summ. p. 385).
HAB. On decorticated wood, *Archer.*

2. **Diatrype elevata** (Berk.).—Sphæria elevata, *Berk. in Hook. Lond. Journ. Bot.* iv. *p.* 298.
HAB. On decorticated wood, *Gunn.*

Gen. LXXXII. SPHÆRIA, *Hall.*

Stroma nullum vel spurium, mycelioideum. *Perithecia* varia, firma, verticalia, nigra vel fuliginea, sæpe corticata. *Ostiolum* breve. *Asci* perfecti. *Sporidia* ut plurimum octona.

A very large genus, consisting of those species which have no stroma, and whose perithecia have a short ostiolum. They are found in all parts of the world, but more especially in temperate regions. (Name from σφαιρα, *a sphere.*)

1. **Sphæria botryosa** (Fr. Syst. Myc. ii. p. 342).
HAB. On dead wood, *Archer.*

2. **Sphæria Saubinetii** (Mont. et Dur. Fl. Alg. p. 479).
HAB. On twigs, *Archer.*

3. **Sphæria (Cæspitosæ) Archeri** (Berk.); conferta, peritheciis rugosis tandem collabendo pateræformibus, sporidiis elongatis curvis quadrinucleatis.

HAB. On dead wood, *Archer*.

Densely crowded. *Perithecia* astomous, rugulose, at length by collapsing saucer-shaped. *Asci* clavate. *Sporidia* biseriate, elongated, curved, quadrinucleate, $\frac{1}{833}$ inch long.—This species at first sight looks very like *S. phæostroma*, but there are no hairs, and the sporidia are different.

4. **Sphæria byssiseda** (Tode, Meck. f. 69).

HAB. On dead wood, *Archer*.

It has rather longer spores ($\frac{1}{833}$–$\frac{1}{1000}$ inch) than British specimens, and thus approaches *S. Desmazierii*, Berk. et Br.

Gen. LXXXIII. CERATOSTOMA, *Fr.*

Stroma nullum l. myceliiforme. *Perithecia* membranacea, nuda, verticalia. *Ostiolum* insigniter elongatum, apice penicillatum.

This genus comprises those simple *Sphæriæ* which have extremely long ostiola ciliated at the tips, and of a soft membranaceous substance. The sporidia moreover are expelled from the ostiola, and often remain attached. (Name from κερας, *a horn*, and στομα, *a mouth*.)

1. **Ceratostoma caprinum** (Fr. Summ. p. 396).

HAB. On dead wood, *Archer*.

It has the same white, flagelliform orifice when perfect as *S. vervecina*, Desm., but it has no subiculum, and the sporidia do not exceed $\frac{1}{3000}$ inch in length, though they are frequently shorter.

Gen. LXXXIV. GLONIUM, *Mühl.*

Perithecium liberum, compositum e ramis radiatim excurrentibus teretiusculis prostratis, rima longitudinali dehiscens. *Subiculum* byssinum.

This curious genus is distinguished from *Hysterium* by its free, very compound perithecia. It is a very unexpected inhabitant of Tasmania, being hitherto confined to the United States and the north of Europe. (Name from κλωνιον, in allusion to the linear orifice of the perithecia.)

1. **Glonium stellatum** (Mühl. Cat. Am. p. 101).

HAB. On dead wood, *Archer*.

Gen. LXXXV. HYSTERIUM, *Fr.*

Perithecium simplex l. subramosum, ellipticum vel elongatum, innatum l. emergens, rima longitudinali dehiscens.

Approaching very near to the Opegraphoid Lichens, but distinguished by the total absence of crust. Essentially plants of temperate regions. (Name from ὑστερον, in allusion to the mode of dehiscence.)

1. **Hysterium tardum** (Berk.); peritheciis ellipticis obtusis tarde apertis, ascis brevibus, sporidiis uniseptatis.

HAB. On the under side of the leaves of *Cyathodes straminea, J. D. H.*

On the under side of the leaves. *Perithecia* flat, elliptic, very obtuse, opening principally in the centre. *Asci* short, thick. *Sporidia* subclavate, uniseptate, $\frac{1}{1000}$–$\frac{1}{1250}$ inch long, with a hyaline border. This species is almost intermediate between *Hysterium* and *Phacidium*. A few specimens only show any trace of an aperture.

Gen. LXXXVI. MUCOR, *Mich.*

Flocci tubulosi, fertiles erecti, terminati sporangio membranaceo dehiscente (raro diffluente) includente *sporidia* discreta.

The species of this genus are developed upon all sorts of decaying substances. The vesicular heads, which do not collapse, as in *Ascophora*, distinguish the genus. Little is known of exotic forms. (Name from the Latin *mucor*; a generic name for Mould.)

1. **Mucor cervinoleucus** (Berk.); flocci simplices, deorsum candidi, sursum ochracei, sporis subcymbæformibus.

HAB. On the dung of some small animal, *Archer*.

Remarkable for its ochroleucous aspect. The *spores* are elliptic, with one side nearly straight, and are about $\frac{1}{1500}$ inch long. *Sporangia* tawny, globose.

Gen. LXXXVII. ENDOGONE, *Lk.*

Flocci fertiles, sporangiis terminati, in massam subglobosam compacti. *Sporidia* ignota.

The fructification of these curious truffle-like Moulds is not satisfactorily known. The vesicles are just like those of *Mucor*, but have not been observed to contain sporidia. (Name from ενδον, *within*, and γιγνομαι, *to be produced*.)

1. **Endogone australis** (Berk.): hemisphærica, alba, sporangiis magnis centralibus aggregatis.

HAB. On the ground, *Archer*.

Hemispherical, about 2 lines across, white. *Sporangia* confined to the centre, $\frac{1}{250}$ of an inch or more across, greenish, collected in little groups.—The pale colour, more branched threads, and central sporangia, distinguish this interesting species, of which there is only a single specimen in the collection.—PLATE CLXXXIII. Fig. 15, *a*, plant, *nat. size*; *b*, section of ditto; *c*, external threads; *d*, sporangia:—*magnified.*

NAT. ORD. VIII. ALGÆ.

By W. H. Harvey, M.D., F.R.S.

SERIES I. MELANOSPERMEÆ.

TRIBE I. *FUCACEÆ.*

Gen. I. SARGASSUM, *Ag.*

(J. Ag. Sp. Alg. i. p. 268. Hook. Fl. N. Zeal. ii. p. 211.)

1. **Sargassum Raoulii** (Hook. fil. et Harv. in Lond. Journ. Bot. iv. p. 523; J. Ag. Sp. Alg. i. p. 288; Kütz. Sp. Alg. p. 616; Hook. Fl. N. Zeal. ii. p. 212).—S. capillaceum, *H. f. et H. Lond. Journ.* vi. *p.* 414.

HAB. Port Arthur, *Lyall, J. D. H., W. H. H.* Georgetown, *Gunn, W. H. H.* Southport, *C. Stuart.*
DISTRIB. New Zealand.

2. **Sargassum biforme** (Sond. in Bot. Zeit. 1845, p. 51; J. Ag. Sp. Alg. i. p. 301).

HAB. Georgetown, *R. Gunn.*

DISTRIB. Western and southern shores of Australia.

3. **Sargassum paradoxum** (R. Br. in Turn. Hist. Fuc. t. 156; J. Ag. Sp. Alg. i. p. 302).

HAB. Georgetown, *R. Gunn.*

DISTRIB. Southern shores of Australia.

Gen. II. SEIROCOCCUS, *Grev.*

(Grev. Alg. Brit. Syn. p. 34; Endl. 3rd Suppl. p. 33; J. Ag. Sp. Alg. i. p. 260.)

1. **Seirococcus axillaris** (Grev.; J. Ag. l. c. p. 260).—Fucus axillaris, *Turn. Hist. t.* 146.

HAB. Georgetown, *Gunn, W. H. H., etc.*

DISTRIB. South coast of Australia: not found west of Cape Northumberland?

Gen. III. SCYTOTHALIA, *Grev.*

(Grev. Syn. p. 34; Endl. 3rd Suppl. p. 33; J. Ag. Sp. Alg. i. p. 257.)

1. **Scytothalia dorycarpa** (Grev.; J. Ag. Sp. Alg. i. p. 258).—Fucus dorycarpus, *Turn. Hist. t.* 143.

HAB. "Van Diemen's Land," *R. Brown, fide J. Ag.*

We have not seen any Tasmanian specimens, and suspect a mistake in the habitat. This plant is very abundant in Western Australia, but is not found, to our knowledge, to the east of Cape Northumberland.

Gen. IV. PHYLLOSPORA, *Ag.*

(Ag. Revis. Macrocyst. p. 311; Endl. 3rd Suppl. p. 32; J. Ag. Sp. Alg. i. p. 252.)

1. **Phyllospora comosa** (Ag. l. c. t. 28. f. 11; J. Ag. Sp. Alg. i. p. 253).—Fucus comosus, *Turn. Hist. t.* 142; *Labill. Pl. Nov. Holl. t.* 258.

HAB. Common on the seacoast.

DISTRIB. South coasts of New Holland. New Zealand.

Gen. V. SCABERIA, *Grev.*

(Grev. Syn. p. 36; J. Ag. Sp. Alg. i. p. 251.—*Castraltia*, Ach. Rich. Fl. N. Zeal. xi. p. 143; Dne. Arch. Mus. xi. p. 175. t. 5. f. 23, 24; Endl. 3rd Suppl. p. 30.)

1. **Scaberia Agardhii** (Grev.; J. Ag. Sp. Alg. l. c. p. 252).—Castraltia salicornoides, *A. Rich. N. Zeal.* xi. *p.* 143.

HAB. Georgetown, etc., *R. Gunn.*

DISTRIB. Western and southern shores of Australia. New Zealand.

By an oversight, this plant is omitted in Hook. Fl. N. Zeal.

Gen. VI. CYSTOPHORA, *J. Ag.*

(J. Ag. Symb. p. 3; Sp. Alg. i. p. 238; Hook. Fl. N. Zeal. ii. p. 214.—*Blossevillea*, Dne. in Arch. Mus. xi. p. 147; Hook. fil. et Harv. in Lond. Journ. vi. p. 414.)

1. **Cystophora monilifera** (J. Ag. Sp. Alg. i. p. 241; Fl. N. Zeal. ii. p. 214).—Blossevillea retroflexa, *Dne.; Harv. in Lond. Journ.* vi. *p.* 414. Fucus retroflexus, *Turn. Hist. t.* 155 (*not of Labill.*).

HAB. Georgetown, etc., *R. Gunn.*

DISTRIB. Western and southern coasts of New Holland. New Zealand.

2. **Cystophora retroflexa** (Labill. Nov. Holl. p. 113. t. 260; J. Ag. Sp. Alg. i. p. 242).—

Blossevillea retroflexa, *Kütz. Sp. Alg. p.* 629. B. caudata, *Hook. fil. et Harv. Lond. Journ.* vi. *p.* 414. Fucus retroflexus, *Labill. t.* 260.

Hab. Georgetown, etc.

Distrib. Western and southern coasts of New Holland. New Zealand.

3. **Cystophora torulosa** (R. Br.; J. Ag. Sp. Alg. i. p. 243; Hook. Fl. N. Zeal. ii. p. 214).—Blossevillea torulosa, *Dne.; Hook. fil. et Harv. Lond. Journ.* iv. *p.* 527. Fucus torulosus, *Turn. Hist. t.* 157.

Hab. Rocks on the coast, common.

Distrib. Western and southern shores of New Holland. New Zealand.

4. **Cystophora xiphocarpa** (Harv.); caule plano decomposite pinnato, pinnis distantibus a latere plano caulis egredientibus retrofractis inferioribus bipinnatis superioribus simpliciusculis, pinnulis basi nudis alterne aculeatis apice pinnatis, pinnulis ultimis gladiiformibus v. lanceolatis planis basi et apice acutis demum in receptacula applanata abeuntibus, vesiculis . . .—*Harv. Alg. Austr. Exsicc. n.* 9. (Tab. CLXXXV.)

Hab. Brown's River, *R. Gunn.* Port Arthur, in tidal rock-pools, *W. H. H.*

Stem 1–2 feet long, in smaller specimens compressed, in larger quite flat, flexuous, rather distantly pinnately branched, the lower branches decompound, the upper gradually simpler. *Branches* issuing from the flat side of the stem, retroflexed at their insertion, distichous, alternate, bipinnate or pinnate. *Pinnæ* (and pinnules of the larger branches) distant, naked in the lower half, zigzag, and armed with the spine-like bases of old ramuli; pinnulate in the upper half. *Ultimate pinnules* or leaf-like ramuli quite flat, lanceolate or sword-shaped, 1–2 inches long, 2–3 lines wide, coriaceous, acute. *Receptacles* flattened; no ripe ones seen. *Vesicles* unknown.

All our specimens grew in shallow water, and therefore probably represent a dwarf form of the species, which appears to be strikingly unlike any other described. The ultimate pinnules and receptacles are as broad as those of *Cystophora platylobium*, and usually longer; and our present plant differs essentially from that species in having refracted branches issuing from the *flat* side of the stem.—Plate CLXXXV. Fig. 1, the root and base of stem; 2, portion of the upper region of the stem and branches: both figures the *natural size.*

5. **Cystophora platylobium** (Mert.; J. Ag. Sp. Alg. i. p. 245).—C. Lyallii, *Hook. fil. et Harv. Fl. N. Zeal.* ii. *p.* 214. *t.* cviii.

Hab. Georgetown. Port Arthur, etc.

Distrib. Southern coasts of New Holland. New Zealand.

6. **Cystophora spartioides** (Turn.; J. Ag. Sp. Alg. i. p. 244).—Fucus spartioides, *Turn. Hist. t.* 232.

Hab. Georgetown, *R. Gunn.* Derwent, *Oldfield.*

Distrib. South shores of New Holland.

7. **Cystophora cephalornithos** (Labill.; J. Ag. Sp. Alg. i. p. 246).—Fucus cephalornithos, *Labill. Pl. N. Holl. t.* 261.

Hab. Georgetown, *R. Gunn.*

Distrib. South coasts of New Holland.

8. **Cystophora uvifera** (Ag.; J. Ag. Sp. Alg. i. p. 246).—Blossevillea uvifera, *Harv. Lond. Journ.* vi. *p.* 414.

Hab. Georgetown, *Gunn, W. H. H., etc.*

Distrib. South shores of New Holland.

9. **Cystophora paniculata** (Turn.; J. Ag. Sp. Alg. i. p. 248).—Fucus paniculatus, *Turn. Hist. t.* 176.

HAB. Georgetown, *R. Gunn, etc.*

DISTRIB. South shores of New Holland.

10. **Cystophora decipiens** (R. Br.; J. Ag. Sp. Alg. i. p. 249).—Fucus decipiens, *Turn. Hist. t.* 166.

HAB. Van Diemen's Land, *R. Brown.*

We have not seen this plant.

Gen. VII. CYSTOPHYLLUM, *J. Ag.*

(J. Ag. Sp. Alg. i. p. 228.—*Cystoseiræ* et *Sargassi* sp., Auct.)

1. **Cystophyllum muricatum** (Turn.; J. Ag. Sp. Alg. i. p. 231).—Fucus muricatus, *Turn. Hist. t.* 112.

HAB. Georgetown.

DISTRIB. West, south, and eastern shores of Australia. Persian Gulf. Coasts of Indian peninsula, *Wight.* Sincapore, *W. Griffith.*

Gen. VIII. XIPHOPHORA, *Mont.*

(Mont. Voy. Pôle Sud, p. 55. Hook. Fl. N. Zeal. ii. p. 215.—*Fucodii* sp., J. Ag. Sp. Alg. i. p. 202.)

1. **Xiphophora Billardieri** (Mont. Pôl. Sud, t. 7. f. 1; Hook. fil. et Harv., Fl. Ant. p. 176. t. 69. f. 3: spores).—Fucodium gladiatus, *J. Ag. Sp. Alg.* i. *p.* 202; *Harv. Phyc. Austr. t.* 53. Fucus gladiatus, *Labill. Pl. Nov. Holl. t.* 256; *Turn. Hist. t.* 240.

HAB. Port Arthur, abundant, *Dr. Jeannerett, Lyall, W. H. H., etc.*

DISTRIB. Auckland Islands and New Zealand. "Western Australia," *Mus. Paris.* Western Port, Victoria, *W. H. H.*

2. **Xiphophora chondrophylla** (Mont.).—Fucodium chondrophyllus, *J. Ag. Sp. Alg.* i. *p.* 203. Fucus chondrophyllus, *R. Br. in Turn. Hist. t.* 222.

HAB. Georgetown, *Gunn, W. H. H.*

DISTRIB. South coast of New Holland. New Zealand.

Gen. IX. HORMOSIRA, *Endl.*

(Endl. Gen. Pl. 3rd Suppl. p. 29; J. Ag. Sp. Alg. i. p. 197; Kütz. Sp. Alg. p. 586.—*Moniliformia*, Lamour. Dict. Class. vii. p. 71; Grev. Syn. p. xxxvi. *Monilia*, A. Rich.)

1. **Hormosira Banksii** (Turn.; J. Ag. Syst. Alg. i. p. 198).—Fucus Banksii, *Turn. Hist. t.* 1. H. Sieberi, *Bory, Coq. p.* 134; *J. Ag. l. c. p.* 199; *Hook. Fl. N. Zeal. p.* 215. H. Labillardieri, *Bory, Coq. p.* 133; *J. Ag. l. c. p.* 199; *Hook. Fl. N. Zeal. p.* 215. Fucus moniliformis, *Labill. Pl. Nov. Holl. t.* 262.

HAB. All round the coast.

DISTRIB. South and eastern coasts of New Holland. New Zealand.

Having had ample experience of the variations of this species, which we have observed *in situ*, in many places from King George's Sound to Western Port, at Sydney, and in New Zealand, as well as on the shores of Tasmania, we feel confident that the three forms here brought together, to which may be added *H. gracilis*

and *H. obconica* of Kützing, cannot be kept specifically distinct. The characters attributed to them by authors depend partly on age, but chiefly on differences in depth of water, and exposure. *H. Sieberi* commonly grows in tidal rock-pools, and *H. Banksii* and *Labillardieri* on stones about low water-mark, the latter occurring in deeper water than the former.

Gen. X. CARPOGLOSSUM, *Kütz.*

(Kütz. Phycol. p. 352; J. Ag. Sp. Alg. p. 192.—*Platythalia,* Sonder in Bot. Zeit. 1845, p. 51.)

1. **Carpoglossum confluens** (R. Br.; Kütz. Phyc. p. 353; J. Ag. Sp. Alg. i. p. 195).—Fucus confluens, *Turn. Hist. t.* 141; *Harv. in Lond. Journ. Bot.* vi. p. 413.

HAB. Port Arthur, *Lyall, W. H. H.* Common.

DISTRIB. South coast of New Holland. Port Phillip and Western Port, *W. H. H.*

Gen. XI. MYRIODESMA, *Dne.*

(Dne. Arch. Mus. ii. p. 148; Endl. 3rd Suppl. p. 29; J. Ag. Sp. Alg. i. p. 191.)

1. **Myriodesma integrifolium** (Harv.); caule basi terete sursum plus minus alato, costa evanescente, phyllodiis distichis decomposite pinnatifidis, laciniis enervibus linearibus obtusis margine integerrimis v. apicem versus minute denticulatis, scaphidiis numerosissimis sparsis. — *Harv. Alg. Exsicc. n.* 43. (TAB. CLXXXVI.)

HAB. Georgetown, *W. H. H.*

DISTRIB. Geelong and Western Port, Victoria.

Frond 1–2 feet long. *Stem* cylindrical, cartilagineo-coriaceous, branched near the base, its principal divisions becoming more and more compressed upwards, then winged, then passing into a lamina traversed by a slender midrib which gradually disappears toward the summit. These main divisions are distichously branched, and their branches repeatedly pinnatifid, with rounded axils, and are destitute of midrib except toward the base of the principal rachides. The laciniæ are 1–2 lines broad, linear, membranaceous, quite entire at the margin, or remotely denticulate, especially toward the apices. *Scaphidia* very numerous, densely scattered over the whole frond. *Colour* olivaceous or foxy.—PLATE CLXXXVI. Fig. 1, the frond, *natural size;* 2, apex of a fertile lacinia; 3, section through the same and through spore-cavities; 4, a spore:—the latter figures *magnified.*

Gen. XII. SARCOPHYCUS, *Kütz.*

(Kütz. Phyc. p. 392; Sp. Alg. p. 587; J. Ag. Sp. Alg. i. p. 189.)

1. **Sarcophycus potatorum** (Labill.; Kütz. Sp. Alg. p. 587; J. Ag. Sp. Alg. i. p. 190).—Fucus potatorum, *Labill. Nov. Holl. p.* 112. *t.* 257; *Turn. Hist. t.* 242.

HAB. Western and northern coasts.

DISTRIB. South coasts of New Holland.

Gen. XIII. SPLACHNIDIUM, *Grev.*

(Grev. Syn. p. 36; J. Ag. Sp. Alg. i. p. 186; Kütz. Sp. Alg. p. 585.)

1. **Splachnidium rugosum** (Grev.; J. Ag. Sp. Alg. i. p. 186; Kütz. Sp. Alg. p. 585).—Fucus rugosus, *Linn. Mant. p.* 311; *Turn. Hist. t.* 185; *Harv. Phyc. Austr. t.* 14.

HAB. Tidal rocks, near low water-mark. Georgetown, *Gunn, W. H. H., etc.*

DISTRIB. South and east coasts of New Holland. New Zealand. Cape of Good Hope.

Gen. XIV. NOTHEIA, *Bail. et Harv.*

(Bail. et Harv. in Wilkes's Amer. Expl. Ex.; Harv. in Hook. Fl. N. Zeal. ii. p. 215.)

1. **Notheia anomala** (Bail. et Harv. l. c.; Harv. in Hook. Fl. N. Zeal. ii. p. 216. t. 109 *A*).

Hab. Parasitic on *Hormosira Banksii*, very common.

Distrib. South and east coasts of New Holland. New Zealand.

Tribe II. *SPOROCHNACEÆ.*

Gen. XV. SPOROCHNUS, *Ag.*

(Kütz. Phyc. p. 342; J. Ag. Sp. Alg. i. p. 173.—*Sporochni* sp., Auct.)

1. **Sporochnus comosus** (Ag. Syst. p. 259; J. Ag. Sp. Alg. i. p. 174; Kütz. Sp. p. 569).

Hab. Georgetown, *R. Gunn, W. H. H., etc.*

Distrib. Coasts of New Holland.

To this place we refer a species common at Georgetown, but which varies much in the relative lengths of the pedicel and receptacle. In the *normal* state, described by Agardh, the pedicel is four times shorter than the receptacle, and so we find it in some specimens. In others, and even on different branches of the same frond, we find pedicels half as long, as long as, or longer than their receptacle. Either, therefore, we must refer all to one head, or establish four or five new names on the specimens before us. This latter could be easily done had we but a few examples to decide from; but after examining some hundreds collected at King George's Sound and Georgetown, we are forced to unite all under one head. When this plant grows in shallow water, it is frequently bushy, the branches much divided; but when, as at Georgetown, it inhabits the deeper parts of the Tamar, in a rapid tideway, the primary branches are nearly simple, and lengthened to two feet or more. Some of our specimens answer to the description given of *Sp. Gærtneri*, a species of which we have seen no specimen.

2. **Sporochnus Herculeus** (J. Ag.); "fronde cylindracea ramis simpliciusculis virgata, receptaculis longissimis cylindraceis subclavatisque in pedicellum ipsis breviorem longe attenuatis." *J. Ag. Sp. Alg.* i. *p.* 175.

Hab. Georgetown, *Gunn, fide J. Agardh.*

This species, which is very imperfectly known to us, is founded by Professor J. Agardh on a specimen which we formerly inadvertently sent him for *S. radiciformis*, but nothing similar to which have we been able to find either in Mr. Gunn's extensive collection or in our own. Professor Agardh has obligingly returned a fragment to Dr. Harvey. This agrees with the diagnosis given, and certainly differs from any of the innumerable specimens of *S. comosus* which have come before us. The species must remain, therefore, for future elucidation.

3. **Sporochnus radiciformis** (R. Br.; J. Ag. Sp. Alg. i. p. 175; Harv. in Lond. Journ. vi. p. 415; Kütz. Sp. Alg. p. 568).

Hab. Georgetown, *Gunn, W. H. H., etc.*

Distrib. South and west coasts of New Holland.

4. **Sporochnus apodus** (Harv.); fronde setacea longissima decomposite ramosa, ramis filiformibus simpliciusculis receptaculis cylindraceis apice subacutis sessilibus horizontaliter patentibus.

Hab. Georgetown, *W. H. H.*

Of this remarkable plant we have, as yet, seen but a solitary specimen, but this is so strongly characterized that we must, for the present, hold it to be a species. It consists of part of a stem, 8–10 inches long, closely set

with branches 10-12-14 inches in length; stem and branches not thicker than hog's-bristle. Throughout the entire length of the branches innumerable receptacles stand out, like spines, at right-angles with the branch. They are perfectly sessile, about 1-2 lines in length, cylindrical, but tapering slightly to the subacute apex, so as sometimes to be nearly subulate. In the varieties of *S. comosus* the tapering is in the opposite direction—to the *base*.

Gen. XVI. BELLOTIA, *Harv.*

(Harv. in Tayl. Ann. Nat. Hist. 1855, p. 332.)

Frons filiformis, solida, umbellatim ramosa, apicibus ramorum fasciculato-comosis. *Receptaculum* in quoque ramo unicum, cylindraceum, mediam partem rami circumvestiens, e paranematibus simplicibus verticalibus dense stipatis constitutum. *Sporæ* ad paranemata lateraliter dispositæ, oblongæ, transversim striatæ.

1. **Bellotia Eriophorum** (Harv. An. Nat. Hist. (1855), xv. p. 332). (Tab. CLXXXVII.)

Hab. Georgetown, rare, *Henty, Gunn.* Derwent (a fragment), *Oldfield.*

Distrib. Port Phillip and Western Port, Victoria, *W. H. H.*

Root clothed with velvety fibres. *Stems* many from the same base, 1-2 feet long, twice as thick as hog's-bristle, terete, rigid, somewhat horny, twice or thrice umbellately compounded. *Umbels* of ten to twenty or thirty rays or more, from 3-4 or 5 inches apart; the bases of all the rays tomentose, the rest bare and quite smooth. *Apices* of all the branches crowned with a very dense spherical tuft of brown filaments, from $\frac{1}{2}$-$\frac{3}{4}$ of an inch in diameter. *Receptacle* cylindrical, developed round each branch in its middle or upper portion, and formed of very densely-packed, simple filaments (*paranemata*), vertically issuing from all sides of the branch, and whorled round it. This receptacle begins to be formed on the upper half of all the young branches above the middle, and extends, at first, nearly to the commencement of the apical tuft; but as the growth continues, the barren portion of the branch above the receptacle considerably elongates, and the receptacle, in a full-grown branch, is removed to nearly the middle region, where it forms a sausage-shaped swelling nearly two inches in length and thrice the diameter of the barren part of the branches. The *paranemata* are quite simple, articulated, cylindrical, their cells three or four times as long as broad, filled with pale-olive endochrome. *Spores* linear-oblong, sessile on both sides of the paranemata, alternate or secund. *Substance* of the stem and branches rigid; of the apical tufts soft, and when young somewhat gelatinous. A cross-cutting of the stem shows a firmly-cellular substance composed of minute polygonal cells, set in lines radiating from a central point.

The fertile portion of the branches varies considerably in length in different specimens. In some the receptacle is developed only in a minute degree, in others it extends nearly the full length of the branch. The generic name is bestowed in honour of Lieut. Bellot, of the French Navy, who was lost in one of the Searching Expeditions for Sir J. Franklin. It differs remarkably in ramification and habit from others of this order.—Plate CLXXXVII. Fig. 1, the plant, the *natural size*; 2, cross section through a receptacle; 3, spore-threads from the same:—both figures *magnified*.

Gen. XVII. CARPOMITRA, *Kütz.*

(Kütz. Phyc. Gen. p. 343; Sp. Alg. p. 569; J. Ag. Sp. Alg. i. p. 177.)

1. **Carpomitra Cabreræ** (Kütz. Phyc. p. 343; Harv. Phyc. Brit. t. 14; J. Ag. Sp. Alg. i. p. 177). —Fucus Cabreræ, *Clem.; Turn. Hist. Fuc. t.* 140.

Hab. Port Arthur, *W. H. H.*

Distrib. South and east coasts of New Holland. New Zealand. Coasts of Spain. South of England and Ireland.

2. **Carpomitra inermis** (Kütz. Phyc. p. 343; Harv. in Lond. Journ. Bot. vi. p. 415; J. Ag. Sp. Alg. i. p. 178).—Fucus inermis, *R. Br. in Turn. Hist. t.* 186.

Hab. Sent by *Mr. Gunn.*

Distrib. South coast of New Holland.

3. **Carpomitra siliquosa** (J. Ag. Sp. Alg. i. p. 178).

Hab. Tasmania, *Baume in Mus. Par.* (Unknown to us.)

Gen. XVIII. NEREIA, *Zanard.*

(Dub. et Solier. Mem. Cour. p. 57. t. 16. *Sporochni* sp., J. Ag. Sp. Alg. i. p. 175.)

1. **Nereia australis** (Harv.); fronde elata filiformi cartilaginea solida decomposite ramosissima, ramis ramulisque alternis sparsisve quoquoversum egredientibus junioribus apice comosis, ramis minoribus suberectis basi angustatis acutis, ramulis setaceis, axillis omnibus acutis, verrucis (receptaculis) elevato-conicis apice comosis demum nudis ex filis ramosis sporas oblongas gerentibus constitutis.—Stilophora? australis, *Harv. in Lond. Journ. Bot.* iii. *p.* 453; *J. Ag. Sp. Alg.* i. *p.* 86; *Harv. Alg. Exsic. Aust. n.* 66. (Tab. CLXXXVIII.)

Hab. Georgetown, *R. Gunn, W. H. H.*

Distrib. Port Phillip, Victoria.

Frond 1–2 feet long, excessively branched and bushy. *Stem* undivided, 1½ line in diameter below, attenuated to the thickness of a bristle above, cartilaginous, solid, with a densely cellular axis, set throughout with lateral branches, which issue irregularly, and are directed towards all sides. Each branch is a repetition of the stem on a smaller scale, and is again and again decompound. All the tips are acute, and crowned when young with a tuft of confervoid fibres. The smaller branches taper to the base, and are more or less furnished with minute setaceous ramuli, each crowned with filaments. The *wartlike receptacles* are densely scattered over the whole frond, and when young bears a tuft of filaments, as in *Sporochnus.*—Plate CLXXXVIII. Fig. 1, a frond, *nat. size;* 2, frustule of a branch, with two setaceous ramuli; 3, longitudinal semisection of a branch; 4, a wartlike receptacle; 5, spore-threads and spores from the same:—the latter figures variously *magnified.*

Tribe III. *LAMINARIACEÆ.*

Gen. XIX. MACROCYSTIS, *Ag.*

(Ag. in Act. Leop. xix. 1. p. 281. J. Ag. Sp. Alg. i. p. 153. Kütz. Sp. Alg. p. 582.)

1. **Macrocystis pyrifera** (Hook. fil. et Harv. Fl. Antarct. i. p. 177, ii. p. 461; Fl. N. Zeal. ii. p. 217).—Macrocystidis omnes sp., *J. Ag. Sp. Alg.* i. *pp.* 155–158 (*excl.* M. obtusa); *Kütz. Sp. Alg. pp.* 582–584. Fucus pyriferus, *Turn. t.* 110.

Hab. All round the coast.

Distrib. South coast of New Holland, New Zealand, west coast of North and South America, and specially in the great Southern Ocean.

Gen. XX. ECKLONIA, *Hornem.*

(Hornem. in Dansk. Vid. Skrift. iii. p. 370. J. Ag. Sp. Alg. i. p. 144. Kütz. Sp. Alg. p. 586. *Capea,* Mont. Ann. Sc. Nat. 1840.)

1. **Ecklonia radiata** (J. Ag. Sp. Alg. i. p. 146).—Capea radiata, *Endl. 3rd Suppl. p.* 27; *Kütz. Sp. Alg. p.* 578. Fucus radiatus, *Turn. Hist. t.* 134. Ecklonia exasperata, *J. Ag. l. c.* Capea biruncinata, *Mont. Canar. p.* 140. *t.* 7.

HAB. Sea-shores.

DISTRIB. Shores of New Holland, New Zealand, Chili, Cape of Good Hope, and Canary Islands.

The less or greater length of rachis, and the absence or presence of spines on the surface of the frond, characters which distinguish the *E. radiata* and *E. exasperata* of Agardh from each other, are certainly variable, and we think we have satisfactorily traced one form into the other. Nor is *E. Richardiana* a more satisfactory species.

Gen. XXI. CHORDA, *Stackh.*

(Lamour. Ess. p. 26. Lyngb. Hyd. Dan. p. 72. Grev. Alg. Brit. p. 46. Harv. Phyc. Brit. t. 107, 285. Kütz. Sp. Alg. p. 548. *Scytosiphon*, Endl. 3rd Suppl. p. 25. J. Ag. Sp. Alg. i. p. 125.)

1. **Chorda lomentaria** (Lyngb. Hyd. Dan. p. 74. t. 18; Harv. Phyc. Brit. t. 285).—Scytosiphon lomentarium, *J. Ag. Sp. Alg.* i. *p.* 126.

HAB. Georgetown, *Gunn, etc.* Southport, *C. Stuart.*

DISTRIB. Native of the Atlantic and Pacific, in the northern and southern temperate zones, and of the Antarctic Sea.

Gen. XXII. ADENOCYSTIS, *Hook. fil. et Harv.*

(Fl. Antarct. i. p. 179. J. Ag. Sp. Alg. i. p. 124. *Chordæ* sp., Kütz.)

1. **Adenocystis Lessonii** (Hook. fil. et Harv. Fl. Antarct. i. p. 179; J. Ag. Sp. Alg. i. p. 124). —Asperococcus Lessonii, *Bory, Coq. t.* 11. *f.* 2. Chorda Lessonii, *Kütz. Sp. Alg. p.* 549.

HAB. Tide-pools at Port Arthur, *W. H. H.*

DISTRIB. Antarctic shores, New Zealand.

TRIBE IV. *DICTYOTACEÆ.*

Gen. XXIII. HALYSERIS, *Targion.*

(Targion. MS. Ag. Sp. i. p. 141. Grev. Alg. Brit. p. 63. Endl. 3rd Suppl. p. 24. Harv. Phyc. Brit. t. 19. Kütz. Phyc. p. 340. J. Ag. Sp. Alg. i. p. 114. Kütz. Sp. Alg. p. 561.)

1. **Halyseris Muelleri** (Sond.); stipite elongato ramoso, fronde dichotoma v. suppressione ramorum alterne ramosa, sinubus obtusiusculis, segmentis erectis latis linearibus integerrimis sæpe alterne divisis, lamina crassiuscula enervi, antheridiis sparsis.—*Harv. Alg. W. Austr. in Trans. R. I. A.* xxii. *p.* 535. H. polypodioides, *Harv. in Lond. Journ. Bot.* vi. *p.* 415.

HAB. Georgetown, etc., common.

DISTRIB. Abundant along the western and southern coasts of Australia.

Gen. XXIV. ZONARIA, *J. Ag.*

(J. Ag. Linnæa, xv. p. 444. Endl. 3rd Suppl. p. 25. J. Ag. Sp. Alg. i. p. 106. *Stypopodii* sp., et *Phycopteris*, Kütz. Sp. Alg. 563, 564.)

1. **Zonaria interrupta** (Ag.; J. Ag. Sp. Alg. i. p. 111).—Phycopteris interrupta, *Kütz. Sp. Alg. p.* 564. Fucus interruptus, *Turn. Hist. t.* 245.

HAB. Georgetown, *R. Gunn, etc.*

Gen. XXV. DICTYOTA, *Lamour.*

(J. Ag. Sp. Alg. i. p. 86. Kütz. Sp. Alg. p. 553. Harv. Phyc. Brit. t. 103.)

1. **Dictyota fastigiata** (Sond. Bot. Zeit. 1845, p. 50; J. Ag. Sp. Alg. i. p. 100).

Hab. Flinders' Island, *Milligan.*

Distrib. West and south coasts of Australia.

2. **Dictyota paniculata** (J. Ag. Symb. p. 5; Sp. Alg. i. p. 91; Kütz. Sp. Alg. p. 558).

Hab. Georgetown, etc.

Distrib. Coasts of Australia.

3. **Dictyota dichotoma** (Lamour.; J. Ag. Sp. Alg. i. p. 92; Kütz. Sp. Alg. p. 554 (also *D. vulgaris*, Kütz.); Harv. Phyc. Brit. t. 103).—Ulva dichotoma, *Eng. Bot. t.* 774.

Hab. Georgetown, etc.

Distrib. Cosmopolitan.

4. **Dictyota nervosa?** (Suhr, in Flora, 1834, ii. t. 1. f. 4; J. Ag. Sp. Alg. i. p. 95; Harv.! Alg. Austr. Exsic. n. 74).

Hab. Georgetown.

Distrib. Cape of Good Hope.

Gen. XXVI. STILOPHORA, *J. Ag.*

(J. Ag. Sp. Alg. i. p. 83. Endl. 3rd Suppl. p. 26. *Spermatochnus*, Kütz. Phyc. p. 334. Sp. Alg. p. 549.)

1. **Stilophora rhizodes** (J. Ag. Sp. Alg. i. p. 85; Harv. Phyc. Brit. t. 70).—Fucus rhizodes, *Turn. Hist. t.* 235.

Hab. Georgetown, in tidal pools, and on the mudflats.

Distrib. Atlantic coasts of Europe and North America.

2. **Stilophora Lyngbyæi** (J. Ag. Sp. Alg. i. p. 84; Harv. Phyc. Brit. t. 237).

Hab. Georgetown, in deep water.

Distrib. Shores of Europe, King George's Sound.

Gen. XXVII. ASPEROCOCCUS, *Lamour.*

(Lamour. Ess. p. 61. J. Ag. Sp. Alg. i. p. 74. *Encœlium* et *Haloglossum*, Kütz.)

1. **Asperococcus Turneri** (Hook. Br. Fl. ii. p. 277; Harv. Phyc. Brit. t. 11).—A. bulbosus, *Lamour. Ess. p.* 62; *Grev. Alg. Brit. p.* 51; *J. Ag. Sp. Alg.* i. *p.* 76.

Hab. Georgetown, etc., common.

Distrib. Atlantic Ocean, Mediterranean, coasts of New Holland, Cape of Good Hope, and Falkland Islands.

2. **Asperococcus sinuosus** (Bory; J. Ag. Sp. Alg. i. p. 75).—Encœlium sinuosum, *Kütz. Sp. Alg. p.* 552.

Tribe V. *CHORDARIACEÆ.*

Gen. XXVIII. LIEBMANNIA, *J. Ag.*

(J. Ag. Alg. Medit. p. 34. Endl. 3rd Suppl. p. 23. J. Ag. Sp. Alg. i. p. 60.)

1. **Liebmannia? australis** (Harv.); fronde subsimplici v. sæpius vage ramosa nunc ramosissima, ramis cylindraceis v. inæqualiter incrassatis carnoso-gelatinosis apice obtusis v. acutis, filis axillaribus densis, periphericis elongatis dichotomis, articulis cylindraceis diametro 3–4-plo longioribus, sporis obovoideis.—*Harv. Alg. Exsic. n.* 88.

Var. β; fronde simpliciuscula intestinæformi.—*Harv. Alg. Exsic. n.* 89.

Hab. Georgetown, *R. Gunn, W. H. H.*

Distrib. South coasts of New Holland.

Frond 6 inches to a foot or more in height, from 2–4 lines in diameter, or sometimes upwards of half an inch across the swollen branches, very irregular in ramification, sometimes nearly simple, sometimes much branched. In the simpler varieties the branches are often much swollen. The substance is firmly carnoso-gelatinous and tough, and the colour a dark-brown, becoming blackish when dry. The axial filaments are very dense, those of the periphery remarkably slender, elongated, several times dichotomous, and perfectly cylindrical, their joints three or four times as long as broad. The *spores* are obovate, with a wide perisperm, and are borne near the bases of the peripheric filaments.—We are not sure whether this species be correctly referable to *Liebmannia*, where we place it on account of the dense axis.

Gen. XXIX. MESOGLOIA, *Ag.*

(J. Ag. Sp. Alg. i. p. 56. Kütz. Sp. Alg. p. 544. Harv. Phyc. Brit. t. 31, 82.)

1. **Mesogloia virescens** (Carm.; Harv. Phyc. Brit. t. 82; J. Ag. Sp. Alg. i. p. 56).

Hab. Georgetown, *R. Gunn.*

Distrib. Atlantic shores of Europe, Gulf of Mexico, south coast of New Holland, and at the Friendly Islands. (Vavau, *W. H. H.*)

Gen. XXX. CLADOSIPHON, *Kütz.*

(Kütz. Phyc. Gen. p. 329. t. 25. f. 1. J. Ag. Sp. Alg. i. p. 54. Kütz. Sp. Alg. p. 547.)

1. **Cladosiphon Chordaria** (Harv.); caule indiviso percurrente, ramis lateralibus longissimis quoquoversis simplicibus v. subdichotomis, ramulis paucis, axillis obtusis, filis periphericis simplicibus brevissimis clavatis unicellularibus, sporis ellipticis.—*Harv. Alg. Exsic. n.* 95, 96; *Phyc. Austr. t.* 60.

Var. β. *Dictyosiphon;* fronde minori densius ramosa, ramis ramulis plus minus obsitis.—C. Dictyosiphon, *Harv. Alg. Exsic. n.* 97.

Hab. Georgetown.

Distrib. South coast of Australia.

Frond a foot or more in height, and as much in the expansion of the branches. *Stem* mostly simple, densely clothed throughout with long lateral branches which issue in all directions. *Branches* filiform, varying in diameter from the thickness of a hog's-bristle to a line; in the former case of equal diameter throughout, in the latter tapering at each end, simple and bare of ramuli, or once or twice forked, or, in var. β, furnished with numerous short patent ramuli. In young specimens the central cavity is narrow, in more advanced it gradually widens, the frond becoming somewhat inflated. The walls of the tube are composed of several rows of longitudinal filaments, densely aggregated into a firmly cellular flesh; the periphery is formed of minute, radiating, simple filaments, each formed of a single clavate cell, issuing from the cells of the outer row of those composing the tube-wall. *Elliptical spores* nestle among the filaments of the periphery.—The Georgetown specimens are of much greater diameter than those from Port Phillip, on which the species was founded. This seems to arise from an increase in diameter of the central tube. I cannot detect any difference in microscopic character, and therefore have brought them together, and also reduce to the same my *C. Dictyosiphon*, which, from its difference in habit, I had previously distributed as distinct.

2. **Cladosiphon nigricans** (Harv.); fronde filiformi longissima subsimplici v. parum ramosa, ramis lateralibus paucis vermiformibus elongatis nudis v. ramulos paucissimos ferentibus, tubo frondis demum amplo, filis periphericis fasciculato-ramosis longiusculis articulatis, articulis diametro sesquilongioribus terminali globoso.—*Harv. Alg. Exsic. n.* 94.

Hab. Georgetown, *R. Gunn, W. H. H.* (Often on *Zostera.*)

Distrib. Western Port, Victoria, *W. H. H.*

Frond 1–2 feet long, simple, with a few lateral simple branches, each several inches or upwards of a foot in length, and either quite naked or furnished with a few distant lesser branches irregularly distributed. The walls of the frond are composed of three or four rows of longitudinal, closely agglutinated filaments. At first the cavity is small, but finally it widens. The peripheric filaments are subfasciculate, irregularly forked or laterally branched; their articulations are cylindrical, and longer than their diameter; the terminal cell is globose, and of larger diameter than the rest, so that each fibre is capitate.—After having been dried, the tube in some cases remains permanently collapsed, but in others it freely opens, a difference perhaps depending on maturity.

Gen. XXXI. LEATHESIA, *S. F. Gray.*

(Gray, Br. Pl. i. p. 301. Endl. 3rd Suppl. p. 23. Harv. Phyc. Brit. t. 176. J. Ag. Sp. Alg. i. p. 50. Kütz. Sp. Alg. p. 543.)

1. **Leathesia tuberiformis** (S. F. Gray, Br. Pl. i. p. 301; Harv. Phyc. Brit. t. 324).—L. marina, *Endl. 3rd Suppl. p.* 23; *Kütz. Sp. Alg. p.* 543; *J. Ag. Sp. Alg.* i. *p.* 52. Rivularia tuberiformis, *Eng. Bot. t.* 1956.

Hab. Rocks: at the mouth of the Tamar, etc.

Distrib. Atlantic shores of Europe and America, Cape of Good Hope, south coast of New Holland.

Gen. XXXII. MYRIONEMA, *Grev.*

(Grev. Crypt. Fl. t. 300. Endl. 3rd Suppl. p. 23. J. Ag. Sp. Alg. i. p. 47.)

1. **Myrionema Leclancherii** (Chauv.; Harv. Phyc. Brit. t. 41 A; J. Ag. Sp. Alg. i. p. 48).—Phyllactidium maculæforme?, *Kütz. Phyc. p.* 295.

Hab. On *Ulvæ:* at Georgetown; parasitic.

Distrib. Atlantic shores of Europe, etc.

Gen. XXXIII. CLADOSTEPHUS, *Ag.*

(J. Ag. Sp. Alg. i. p. 41. Harv. Phyc. Brit. t. 33. 138. Kütz. Sp. Alg. p. 468.)

1. **Cladostephus spongiosus** (Ag. Sp. p. 12; Harv. Phyc. Brit. t. 138; Hook. fil. Fl. Antarct. p. 163; J. Ag. Sp. Alg. i. p. 43).

Hab. Tasmania, *C. Stuart.*

Distrib. A native of Europe, North and South America, and of the south coasts of Australia, etc.

Tribe VI. *ECTOCARPACEÆ.*

Gen. XXXIV. SPHACELARIA, *Lyngb.*

(Lyngb. Hyd. Dan. p. 103. J. Ag. Sp. Alg. i. p. 29.)

1. **Sphacelaria paniculata** (Suhr; J. Ag. Sp. Alg. i. p. 36).—S. hordeacea, *Harv. in Hook. Ic. Pl. t.* 614. Stypocaulon paniculatum, hordeaceum, *et* virgatum, *Kütz.*

Hab. Coast rocks, common: Georgetown, Port Arthur.

Distrib. Coasts of New Holland and New Zealand, Cape of Good Hope.

Gen. XXXV. ECTOCARPUS, *Lyngb.*

(Lyngb. Hyd. Dan. p. 130. J. Ag. Sp. Alg. i. p. 14. Kütz. Sp. Alg. p. 449.)

1. **Ectocarpus siliculosus** (Lyngb.; J. Ag. Sp. Alg. i. p. 22; Kütz. Sp. Alg. p. 451; Harv. Phyc. Brit. t. 162).

HAB. Georgetown, etc.

DISTRIB. Northern and southern temperate zones.

2. **Ectocarpus fasciculatus** (Harv. Man. ed. 2. p. 59; Harv. Phyc. Brit. t. 273; Wyatt, Alg. Damn. n. 302; Kütz. Sp. Alg. i. p. 22).

HAB. On *Chorda lomentaria,* at Georgetown, *J. Penny.*

Our specimens agree pretty nearly with specimens from the British seas, but are not fully matured. They are however in fruit.

3. **Ectocarpus sordidus** (Harv.); fronde decumbente debili alias algas investiente vage et parce ramosa, ramis paucis flexuosis subsimplicibus nudisque hic illic ramulum horizontalem brevem ferentibus.

HAB. Georgetown, covering small *Algæ, Gunn.*

This resembles the British *E. crinitus,* to which it might without much violence be referred. It forms sprawling strata, investing the smaller *Algæ,* when growing in muddy places.

SERIES II. RHODOSPERMEÆ.

TRIBE I. *RHODOMELACEÆ.*

Gen. XXXVI. CLAUDEA, *Lamour.*

(Lamour. An. Mus. xx. p. 121. Endl. 3rd Suppl. p. 50. Kütz. Sp. Alg. p. 887.)

1. **Claudea elegans** (Lamour. Ess. t. 2. f. 2, 4; Kütz. Sp. Alg. p. 888; Harv. in Lond. Journ. Bot. iii. p. 408. t. 20; Harv. Ner. Austr. 15; Phyc. Austr. t. 1).—Fucus Claudei, *Turn. Hist. t.* 243.

HAB. In the Tamar, above Georgetown, especially at Point Rapid.

DISTRIB. Western Australia.

Gen. XXXVII. MARTENSIA, *Her.*

(Hering, Ann. Nat. Hist. viii. p. 92. Harv. Ner. Austr. p. 73. Kütz. Sp. Alg. p. 888.)

1. **Martensia,** sp.

HAB. In the Tamar, at Georgetown, *Gunn, Fereday.*

We regret that at present it is out of our power to determine this plant. Fragments of the fringe of a gigantic *Martensia,* much larger and more robust than any we have elsewhere seen, have been sent to us by Mr. Gunn, and similar fragments have been found by Mr. Fereday. No state of *M. elegans* that we have examined resembles these fragments, and they are still less like any of the other described species, except perhaps *M. australis,* Harv., from Swan River. The fringe, when perfect, must have been more than 6 inches in breadth; the individual meshes are nearly ¼ inch long, the walls of the meshes more than a line in breadth; and the exterior margin of the network fimbriato-laciniate. Until the membranous portion of the frond, and especially the base of the membrane, shall have been seen, it will be impossible satisfactorily to determine the species.

Gen. XXXVIII. POLYPHACUM, *Ag.*

(Ag. Syst. p. 274. Endl. 3rd. Suppl. p. 33. Harv. Ner. Austr. p. 17.—*Epiglossum*, Kütz. p. 878.)

1. **Polyphacum Smithiæ** (Harv. Ner. Austr. p. 17. t. 3).—Epiglossum Smithii, *Kütz. Sp. Alg. p.* 878.

Hab. Circular Head, *Mrs. Smith.*

Distrib. South coast of Australia, *W. H. H., F. Mueller, etc.*

Gen. XXXIX. ? THAMNOCLONIUM, *Kütz.*

(Kütz. Phyc. Gen. p. 392. Sp. Alg. p. 793.)

1. **Thamnoclonium hirsutum** (Kütz. Sp. Alg. p. 793).—Polyphacum dichotomum, *J. Ag.*

Hab. At the mouth of the Tamar, in deep water.

Distrib. Coast of New Holland.

Gen. XL. LENORMANDIA, *Sond.*

(Sond. Bot. Zeit. 1845, p. 54. Harv. Ner. Austr. p. 18. Kütz. Sp. Alg. p. 849.)

1. **Lenormandia marginata** (Hook. fil. et Harv. Ner. Austr. p. 19. t. 2; Kütz. Sp. Alg. p. 849).

Hab. Common in the Tamar, at Georgetown.

Gen. XLI. JEANNERETTIA, *Hook. fil. et Harv.*

(Harv. Ner. Austr. p. 20.)

1. **Jeannerettia lobata** (Harv. Ner. Austr. p. 20. t. 4).—Botryoglossum lobatum?, *Kütz. Sp. Alg. p.* 881; *Harv. Phyc. Austr. t.* 33.

Hab. Port Arthur, *Jeannerett.* In the Tamar, *R. Gunn, W. H. H., etc.*

Distrib. West and South Australia.

This plant scarcely differs generically from the following, with which it sufficiently agrees in habit. By Kützing it has been erroneously referred to *Botryoglossum*, from which it is widely separated by its fructification. The *ceramidia*, with which we were unacquainted when the genus was first described, resemble those of *Pollexfenia pedicellata.*

Gen. XLII. POLLEXFENIA, *Harv.*

(Harv. in Hook. Lond. Journ. Bot. iii. p. 431. Ner. Austr. p. 21.)

1. **Pollexfenia pedicellata** (Harv. in Hook. Lond. Journ. Bot. iii. p. 431; Ner. Aust. p. 22. t. 5; Kütz. Sp. Alg. p. 875).

Hab. Abundant at Georgetown, etc.

Distrib. West and south shores of Australia.

The colour of the figure in Ner. Austr. is much too bright. It should be of a sober brownish-red, or purplish.

Gen. XLIII. DICTYMENIA, *Grev.*

(Grev. Syn. p. 50. Endl. 3rd Suppl. p. 47. Harv. Ner. Austr. p. 28. Kütz. Sp. Alg. 847.)

1. **Dictymenia Harveyana** (Sond. in Linn. xxv. p. 697).—D. tridens, *Harv. Ner. Austr. p.* 28. *t.* 7 (*not of Grev.*).

HAB. Georgetown; plentiful.

DISTRIB. South coast of New Holland.

Gen. XLIV. ACANTHOPHORA, *Lx.*

(Lamour. Ess. p. 44. Grev. Syn. p. 54. Endl. 3rd Suppl. p. 47. Harv. Ner. Austr. p. 34. Kütz. Sp. Alg. p. 858.)

1. **Acanthophora Tasmanica** (Sond.); fronde cartilaginea ultrasetacea decomposite ramosissima, ramis primariis elongatis lateraliter ramosis, secundariis brevibus ramulis brevibus plus minus onustis, spinulis minutis quaquaversis pinnatifido-dentatis solitariis v. aggregatis nunc spinula subulata indivisa fulcratis.—*Sond. in Linn.* xxv. *p.* 699. Polysiphonia, *n. sp.?*, *Harv. Alg. Austr. Exsicc. No.* 165.

HAB. Georgetown, between tide-marks, on the flats, *R. Gunn, W. H. H., etc.*

Frond twice as thick as hog's-bristle, 6–8 inches long, much branched, the branches three to four times compounded in an alternate manner, spreading to all sides. Main branches 3–4 inches long, nearly bare below, in the upper part set with one or two series of short, simple, or little-divided branchlets. All the younger branches and ramuli are closely beset with patent spinulæ, half a line in length, spirally inserted, very patent and sharply inciso-dentate or pinnatifid. *Colour* a dark brown. *Substance* cartilaginous, rather soft, adhering to paper.

2. **Acanthophora arborea** (Harv.); fronde dendroidea incrassata decomposite ramosissima, ramis primariis elongatis versus apicem attenuatis lateraliter ramosissimis, ramis secundariis brevibus dichotomo-multifidis, ramulis brevissimis spinulosis, spinulis subulatis fasciculatis undique insertis imbricatis, ceramidiis subterminalibus pedunculatis ovatis.—A. Tasmanica, *Harv. Alg. Austr. Exsicc. n.* 140 (*not of Sonder*).

HAB. Rocks: at low water-mark, in the Tamar, above Georgetown, *W. H. H.*

Fronds 12–18 inches long, as thick as crowquill below, attenuated upwards, branched from a short way above the base, bushy and tree-like. Principal branches few, subsimple, resembling the main stem, and equal in thickness, erecto-patent, more or less clothed with lesser branches. The secondary branches are 1–2 inches long, slender as hog's-bristle, and much divided in an irregularly dichotomo-alternate manner, the ultimate ramuli being not more than two or three lines long. All the lesser divisions and ramuli are closely set with imbricated subulate spines directed to all sides. *Capsules* ovate, on longish stalks, near or at the end of the branches. *Colour* dark brownish-purple when fresh, black when dry.

Gen. XLV. RHODOMELA, *Ag.*

(Ag. Sp. Alg. i. p. 368. Grev. Syn. p. 51. Endl. 3rd Suppl. p. 47. Harv. Ner. Austr. p. 34.)

1. **Rhodomela pericla dos** (Sond.); cæspitosa, fronde subsimplici v. furcata, ramis paucis lateralibus simplicibus, ramulis aculeiformibus acutis brevibus demum fasciculato-multifidis undique insertis, cystocarpiis subglobosis sessilibus v. brevissime pedicellatis, tetrasporis in ramulis fasciculatis ultimis nidulantibus.—*Harv. Phyc. Austr. t.* 28. R. simpliciuscula, *Harv. Alg. Austr. Exsicc. n.* 136.

HAB. East coast, and Brown's River, *R. Gunn.* Southport, *C. Stuart.*

DISTRIB. Port Phillip, Victoria, *Mueller, W. H. H.*

Densely tufted. *Fronds* issuing from matted roots, 2–4 inches high, simple or once or twice forked, and occasionally furnished with one or two lateral simple branches. Branches sometimes nearly naked, but in well-grown specimens furnished through the whole length with spinelike ramuli, 1–2 lines long, which are at first subsimple, but afterwards, by development from their inner side, become fasciculato-multifid. *Colour* very dark brown, black when dry. *Substance* rather rigid, not strongly adhering to paper in drying. *Cystocarps* (on the Port Phillip spe-

cimens) roundish-ovate, with wide mouths, sessile on the ramuli, or near the tips of their lesser divisions. *Tetraspores* (on Tasmanian specimens) in an irregular double row in the ultimate ramuli.

Gen. XLVI. CHONDRIA, *Ag.*

(J. Ag. ref. Harv. in Ner. Bor. Amer. pt. 2. p. 19. Fl. N. Zeal. p. 223.)

1. **Chondria dasyphylla** (Ag. Sp. Alg. i. p. 350).—Laurencia dasyphylla, *Grev.; Harv. Phyc. Brit. t.* 152. Fucus dasyphyllus, *Turn. Hist. t.* 22, *etc.*

Hab. Common at Georgetown. Derwent, *Oldfield.*

The Tasmanian specimens are frequently of very large size, 3–4 feet long, and excessively branched. Such specimens grow in the deeper and more rapid parts of the Tamar channel.

2. **Chondria verticillata** (Harv.); fronde tereti succosa siccitate badia bis-terve umbellatim divisa, ramulis fasciculato-verticillatis saccatis oblongis obtusissimis basi-constrictis, tetrasporis in ramulis nidulantibus.—*Harv. in Trans. R. I. Acad.* xxii. *p.* 539; *Alg. Austr. Exsic. n.* 161.

Hab. Georgetown, rare, *R. Gunn, Rev. J. Fereday.*

3. **Chondria tenuissima** (Ag.).—Laurencia tenuissima, *Grev.; Harv. Phyc. Brit. t.* 198. Fucus tenuissimus, *Turn. Hist. t.* 100 (?)

Hab. Georgetown, *R. Gunn.*

4. **Chondria opuntioides** (Harv.); fronde inferne cartilaginea solidescente obsolete constricta dichotoma, superne di-trichotoma articulato-constricta membranacea succo aquoso repleta, ramulis ad genicula verticillatis articulatis, articulis ramorum puncto affixis (cito in aqua dulci sejunctis) ovali-oblongis basi et apice obtusissimis, cystocarpiis ovatis sessilibus.—Chylocladia opuntioides, *Harv. Trans. R. I. Acad.* xxii. *p.* 556. C. Tasmanica, *Lond. Journ.* iii. *p.* 444. Catenella major, *Sond. Pl. Preiss.* (*fide sp.!*) Rhabdonia Sonderi, *J. Ag.* (*not of Harv.*). (Tab. CLXXXIX.)

Hab. Georgetown, etc.; common.

Distrib. West and south coasts of Australia.

Fronds a foot to 18 inches high, and as much in expansion, tufted, excessively branched in a di-trichotomous manner. *Main stem* solid, cylindrical and continuous in its lower part, becoming more or less constricted upwards at intervals of about an inch, then becoming regularly articulato-constricted, hollow, succulent, and filled with watery juice, dichotomous or fasciculately branched; lesser divisions frequently trichotomous, strongly constricted, beset at the constrictions with more or less abundant, whorled, articulated, simple or dichotomous ramuli. *Articulations* elliptical or oblong, readily separating. When thrown into fresh-water, the whole frond rapidly breaks up the branches and ramuli falling off in single joints, leaving a bare stem, with a few of its principal divisions. *Cystocarps* ovate, sessile on the sides of the ramuli. *Tetraspores* of large size, imbedded in the ultimate ramuli. *Colour* a full red, rapidly given out in fresh-water. *Substance*, when quite fresh, cartilaginous, but very juicy, and soon becoming flaccid. In drying, it most closely adheres to paper.

I suppose this to be the *Chylocladia articulata* of Australian botanists, as it appears to be found commonly along the whole southern coast, and often assumes the habit of the true *C. articulata* of Europe, though differing greatly from that plant in substance, structure, and fructification. At first I referred the present species to *Chylocladia*, but the discovery of *cystocarps* and *tetraspores* on Tasmanian specimens compels its removal into *Chondria*, where it associates naturally with *C. clavata* and *C. verticillata*.—Plate CLXXXIX. Fig. 1, a frond, the *natural size;* 2, ramulus, with tetraspores; 3, a tetraspore; 4, ramulus, with conceptacle; 5, spores from the same: the latter figures *magnified.*

5. **Chondria ?? bulbosa** (Harv.); fronde coccinea a basi ramosa, ramis primariis basi incrassato-

bulbosis bulbo oblongo solido sursum filiformibus alterne decompositis, secundariis ramulisque quaquaversis sparsis obtusis basi attenuatis.

Hab. East coast, *Gunn*. Derwent, *Oldfield*.

Frond 3–4 inches high, branched from the base. *Primary branches* numerous, each of them swelling at base into an oblong, solid bulb, from ½–¾ of an inch long and 1–2 lines in diameter. Beyond the bulb the branches are filiform, twice as thick as hog's-bristle, and alternately decompound, the lateral branches directed to all sides. *Secondary branches* virgate, simple, having a few scattered ramuli, which are obtuse at the apex and much attenuated to the insertion.

Dried specimens do not readily recover their form on being remoistened, and we are not quite certain as to the internal structure of the frond. There is some appearance of internal septa at short intervals, and this character, added to the form of the ramuli, has induced us to place this curious plant provisionally in *Chondria*. Until fruit shall have been found, its place in the system cannot be finally ascertained. The *habit* is that of a *Rhabdonia*.

6. **Chondria fusifolia** (Hook. fil. et Harv.).—Laurencia fusifolia, *Hook. fil. et Harv. in Lond. Journ.* vi. *p.* 401.

Hab. Sullivan's Cove, *Dr. Lyall*.

Gen. XLVII. RYTIPHLŒA, *Ag.*

(Ag. Sp. Alg. ii. p. 50. Harv. Ner. Austr. p. 31. Kütz. Sp. Alg. p. 844.)

1. **Rytiphlœa simplicifolia** (Harv.); fronde foliacea costata a costa repetite prolifera et demum spurie ramosissima, foliis linearibus planis v. subcanaliculatis costa tenui percursis opacis tenuissime transversim striatis obtusis basi in petiolo attenuatis, stichidiis linearibus involutis fasciculatis e costa enatis.—*Harv. Alg. Austr. Exsic. n.* 133.

Hab. Tasmania, rare, *R. Gunn*.

Distrib. South coast of Australia, rare, *W. H. H.*

Primary leaf from an inch to 3 or 4 inches long or more, from 1–2 lines wide, quite flat, and traversed by a slender midrib, from which numerous similar leaves, 1–3 inches long, are thrown out proliferously, without any definite order. These in like manner bear a third, and those a fourth series of similar leaves, until there results a bushy, much compounded frond, composed of simple leaflets. All the *leaflets* are linear, obtuse, tapering to the base into an imperfect petiole, and are of a closely-cellular substance, rather opaque, and very finely striate transversely. The *colour* is a dull deep-red. *Stichidia* tufted, linear, issuing from the midribs.

In habit this plant resembles a very narrow form of *Lenormandia spectabilis*, but is of much closer cellular substance, and the reticulations are not diagonal, as in all the species of *Lenormandia*. Perhaps it would range better in *Dictymenia* than in *Rytiphlœa*.

2. **Rytiphlœa australis** (Endl. 3rd Suppl. p. 48; Mont. Fl. Canar. p. 154, in not.).—R. australasica, *Harv. Ner. Austr. p.* 32; *Swan Riv. Alg. n.* 65. *p.* 538; *Alg. Exsic. Austr. n.* 134; *Phyc. Austr. t.* 27.

Hab. Southport, *C. Stuart*.

Distrib. Common on the western and southern coasts of Australia.

Gen. XLVIII. BOSTRYCHIA, *Mont.*

(Mont. Hist. Cub. Bot. p. 39. Harv. Phyc. Brit. t. 48. Ner. Austr. p. 58. Kütz. Sp. p. 839.)

1. **Bostrychia mixta** (Hook. fil. et Harv.; Lond. Journ. iv. p. 270; Harv. Ner. Austr. p. 70; Fl. N. Zeal. ii. p. 225; Harv. Alg. Exsic. n. 141).

Hab. On stones, above half-tide. Port Arthur, *W. H. H.*

Distrib. New Zealand and Cape of Good Hope.

2. **Bostrychia distans?** (Harv. in Fl. N. Zeal. ii. p. 226).

Hab. In the Derwent, at New Norfolk, *Gunn.* Rivers in New Zealand.

If this be not identical with the New Zealand species found in similar localities, it is at least nearly allied to it. Our specimens are not in good order.

3. **Bostrychia Harveyi** (Mont. Fl. Chil. Cell. ii. p. 307. t. 16. f. 4; Hook. Fl. N. Zeal. ii. p. 225).

Hab. Tasmania, *C. Stuart.*

Distrib. A native of Chiloe and of New Zealand. Closely allied to the *B. scorpioides* of Europe, but more slender.

Gen. XLIX. POLYZONIA, *Suhr.*

(Suhr in Flora, 1834, p. 739. Harv. Ner. Austr. p. 70. Kütz. Sp. Alg. p. 881.)

1. **Polyzonia incisa** (J. Ag. in Linn. xv. p. 24; Harv. Ner. Austr. p. 71).

Hab. Parasitical on various *Algæ.*

Gen. L. POLYSIPHONIA, *Grev.*

(Grev. Fl. Edin. p. 308. Harv. Ner. Austr. p. 37. Kütz. Sp. Alg. p. 802.)

Subgenus 1. OLIGOSIPHONIA, *J. Ag.*

1. **Polysiphonia Hookeri** (Harv. Ner. Aust. p. 40. t. 12).—P. acanthophora, *Harv. in Lond. Journ. Bot.* iii. *p.* 441.

Hab. Georgetown, abundant.

2. **Polysiphonia Mallardiæ** (Harv. Ner. Austr. p. 40. t. 13).

Hab. Georgetown. Coast of New Holland.

3. **Polysiphonia Hystrix** (Hook. fil. et Harv.; Harv. Ner. Austr. p. 41. t. 14).

Hab. Georgetown, etc. Coast of New Holland.

4. **Polysiphonia breviarticulata** (J. Ag. Alg. Medit. p. 135; Harv. in Ner. Bor. Amer. ii. p. 36. t. 16 *b.*; Trans. R. I. Acad. xxii. p. 539).

Hab. Piper's River, *R. Gunn.* Native of Europe and North America.

5. **Polysiphonia abscissa** (Hook. fil. et Harv.; Fl. N. Zeal. ii. p. 227).—P. abscissa and P. microcarpa, *Fl. Ant. et Harv. Ner. Austr.*

Hab. Georgetown, *R. Gunn, W. Archer.* Native of Antarctic Sea and New Zealand.

The Tasmanian specimens are larger and somewhat coarser and duller in colour than those from the Antarctic Sea, but the differences do not seem to warrant their specific separation. The species represents *P. formosa* and *P. urceolata* in the Southern Ocean, and is probably as variable as those forms are well known to be.

6. **Polysiphonia mollis** (Hook. fil. et Harv.; Harv. Ner. Austr. p. 43).

Hab. Georgetown, on *Zostera*; common. South coast of New Holland.

7. **Polysiphonia crassiuscula;** fuscescens, cartilagineo-succosa, siccitate subrigida, rugosa, fronde ultrasetacea sursum maxime attenuata pluries dichotoma, axillis patentibus, ramis minoribus irregulariter dichotomis nudis v. ramulis paucis lateralibus plus minus obsitis, axi tetrasiphonio, articulis superioribus diametro æqualibus v. sublongioribus ecorticatis, inferioribus diametro brevioribus plus minus dense corticatis.

HAB. East coast, *R. Gunn.*

Fronds 4–6 inches high, not densely tufted, repeatedly dichotomous from the base, the lower axils very patent; cartilaginous, and thickly coated with secondary cells in the lower part, softer and more pellucid above, and at the ends of the branches flaccid, much attenuated and pellucid. *Articulations* short in all parts of the frond, only equalling their diameter toward the ends of the young branches, four-tubed. The lower articulations are more or less obliterated, being covered externally with several rows of accessory cells. *Colour* a dingy reddish-brown when dry. *Substance* rigid, the tips only adhering to paper.

Our specimens are few, and not in first-rate order.

8. **Polysiphonia laxa;** fronde setacea elongata rigidiuscula rufescente angulatim flexuosa laxe ramosa, ramis primariis patentibus paucis elongatis varie divisis, secundariis brevibus divaricato-patentibus alternis v. sæpe secundis subsimplicibus v. lateraliter ramulosis, ramulis paucissimis setaceis, articulis tetrasiphoniis ecorticatis mediis diametro 3–4-plo superioribus duplo longioribus ultimis diametro æqualibus.

HAB. Tasmania, *R. Gunn.*

Frond upwards of a foot long, as thick as hog's-bristle, very laxly branched, the branches distant, zigzag-bent, throwing off branchlets at the angles; the principal branches several inches long, variously set with short lateral branches, which are often secund, subsimple, slightly branched, or having a few setaceous ramuli. All the ramification is remarkably patent. The *substance* is somewhat rigid, and the plant does not closely adhere to paper.

We have only seen a solitary specimen, which is very dissimilar in character to any Australian species known to us. It is attached to a fragment of *Zostera.*

9. **Polysiphonia succulenta;** fronde badia gelatinoso-cartilaginea ultrasetacea sensim attenuata apice flaccida dichotome ramosissima, ramis lateralibus irregulariter dichotomis v. multipartitis, ultimis in ramulos fasciculatos multifidos desinentibus, articulis ecorticatis tetrasiphoniis mediis diametro subtriplo longioribus superioribus brevioribus ultimis diametro æqualibus, tetrasporis in ramulis nidulantibus.

HAB. Georgetown, on *Zostera, R. Gunn.* (Oct. 1848.)

We have only seen a single specimen. It resembles a large and coarsely-grown *P. mollis,* but the frond is much more robust and succulent than in that species, and the habit more flabelliform, with dense fasciculato-multifid terminal ramuli. *Frond* 6 inches high, much branched from the base, the branches dichotomous. *Colour* when dry a rich dark-brown. *Substance* somewhat similar to that of *Griffithsia secundiflora.*

10. **Polysiphonia vagabunda** (Harv.); cæspitibus minutis globosis (natantibus) roseis siccitate fuscescentibus, frondibus pusillis intricatis vage ramosis, ramis elongatis horizontalibus v. divaricatis arcuatis, ramulis paucis sæpe secundis divaricatis, articulis tetrasiphoniis diametro æqualibus.—*Harv. Alg. Austr. Exsic. n.* 183.

HAB. Floating in the sea, at Eagle Hawk Neck, *W. H. H.*

This curious little species occurred in such immense quantity as to colour the sea for a considerable distance round the shore, each wave, as it rolled in, appearing as if thickened with *raspberry jam.* The mass, when examined, proved to be composed of innumerable minute, spherical tufts, each about two lines in diameter, composed of filaments intricately woven together, very irregularly branched, the branching remarkably divaricate. At an earlier stage, probably, the plant was attached, but when found it appeared in full life, and not a mere waif of the sea; and I was informed by a gentleman resident at the Neck that he had repeatedly noticed the waves, in that part of the bay, to be similarly filled with this little plant.

SUBGENUS 2. POLYSIPHONIA.

11. **Polysiphonia cancellata** (Harv. Lond. Journ. iii. p. 440; Harv. Ner. Austr. p. 51. t. 15).

Hab. On the larger *Algæ*, very common.

Distrib. West and south and east coasts of New Holland.

12. **Polysiphonia Frutex** (Harv. Lond. Journ. iii. p. 439; Ner. Austr. p. 52).

Hab. Georgetown, etc., common.

Distrib. South coast of New Holland.

13. **Polysiphonia fuscescens** (Harv. Lond. Journ. iii. p. 439; Ner. Austr. p. 52).

Hab. Georgetown, etc., common.

Distrib. South coast of New Holland.

14. **Polysiphonia versicolor** (Hook. fil. et Harv.; Lond. Journ. vi. p. 399; Harv. Ner. Austr. p. 48. t. 16).

Hab. Georgetown, etc.

Distrib. West and south coasts of New Holland.

15. **Polysiphonia monilifera** (Hook. fil. et Harv.; Lond. Journ. vi. p. 399; Harv. Ner. Austr. p. 49. t. 16).

Hab. At Georgetown, rare, *R. Gunn.*

16. **Polysiphonia ericoides** (Harv. Lond. Journ. vi. p. 400; Ner. Austr. p. 50).

Hab. Tasmania, *Rev. Mr. Ewing.* Port Arthur, *W. H. H.*

17. **Polysiphonia cladostephus** (Mont. Voy. Pôl. Sud, i. p. 132. t. 13. f. 4 A; Harv. Ner. Austr. p. 45; Fl. N. Zeal. ii. p. 232).—Pol. byssoclados, *Harv. Lond. Journ.* iii. *p.* 436. Cladostephus australis, *Ag. Syst. p.* 169. Griffithsia australis, *Ag. Sp. Alg.* ii. *p.* 135. Bindera cladostephus, *Dcne.*

Hab. Common, especially at Georgetown.

Distrib. All along the west and south coasts of New Holland. New Zealand. Auckland Islands, etc.

18. **Polysiphonia spinosissima** (Harv.); fuscescens, dense cæspitosa, fronde setacea fruticosa articulata sulcata decomposite ramosissima, ramis quaquaversis creberrimis patentibus pluries pinnatim compositis, ramulis spicæformibus squarrosis spiraliter insertis brevibus crebris, articulis septemsiphoniis, ramorum diametro sesquilongioribus, ramulorum brevissimis.—*Harv. Alg. Austr. Exsic. n.* 173.

Hab. Tasmania, *C. Stuart.*

Distrib. Coast of Victoria, at Port Fairy, *W. H. H.*

Tufts 2–3 inches high, very dense, many fronds growing from the same base. *Stems* about as thick as hog's-bristle, articulated to the base, and very densely beset with lateral, patent branches directed to all sides, so as to give a shrub-like aspect to the plant. The principal *branches* are again beset with a second, and occasionally a third set, directed to all sides, and closely alternating in insertion. All the branches are densely set with short, spinelike, divaricate or reflexed ramuli, about a line in length. The *articulations* have seven radiating tubes, and are short throughout the plant; those of the branches scarcely once and half as long as broad, and those of the ramuli much shorter than their breadth. The *colour* is a dark brown when dry, a pale brown when recent. The *substance* is soft, and soon decomposes in fresh-water. Frequently the whole plant is densely clothed with byssoid hairs.—The Tasmanian specimens entirely correspond with those from Victoria. Mr. Stuart does not give their exact habitat. Those from Port Fairy grew in a narrow tide-channel, or small creek, and not in the open sea.

Gen. LI. DASYA, *Ag.*

(Ag. Sp. Alg. ii. p. 116. Harv. Ner. Austr. p. 57. Fl. N. Zeal. ii. p. 232.)

1. **Dasya Gunniana** (Harv. Ner. Austr. p. 59. t. 17).—Pol. Gunniana, *Harv. in Lond. Journ. Bot.* iii. *p.* 437.

HAB. Georgetown, plentiful, *Gunn.*

DISTRIB. West and south coasts of Australia; common in Port Phillip.

2. **Dasya Lawrenciana** (Harv. Ner. Austr. p. 60. t. 18.)—Pol. Lawrenciana, *Harv. Lond. Journ.* iii. *p.* 438.

HAB. Georgetown, rare.

I have doubts whether this be more than an opaque variety of *D. Gunniana.*

3. **Dasya capillaris** (Hook. fil. et Harv.; Harv. Ner. Austr. t. 19).

HAB. Georgetown, on the wooden piles of the pier, etc., and on *Algæ.*

4. **Dasya naccarioides** (Harv. in Hook. Lond. Journ. iii. p. 432; Harv. Ner. Austr. p. 63. t. 22).

HAB. Abundantly at Georgetown.

DISTRIB. South coast of Australia.

5. **Dasya Tasmanica** (Sond.); "caule crasso elongato cartilagineo nudo alterne ramoso, ramis subelongatis iterum ramosis inarticulatis, ramulis divaricatis densissime ramellis roseis monosiphoniis vestitis, ramellis patentibus dichotomis, articulis diametro duplo triplove longioribus, terminali obtusissimo, ceramidiis ovato-subglobosis brevissime pedicellatis."—*Sond. in Linn.* xxv. *p.* 702.

HAB. Tasmania, *Stuart.* On the Flats, Georgetown, *R. Gunn.*

Frond 6–12 inches long, robust, decompound. *Branches* lateral, elongate, patent, set with one or two series of shorter branchlets and ramuli. The main stem and branches are denuded; the shorter branchlets and ramuli densely covered with dichotomo-multifid ramuli. The habit is very similar to that of *D. elongata,* but the ramelli are *obtuse,* not *acutely* pointed as in that species.—Our specimens are dull reddish-brown, and closely adhere to paper. We have not seen an authentic specimen of Sonder's plant.

6. **Dasya hapalathrix** (Harv.); caule longissimo (4–6-pedali) glabro repetite decomposite ramoso, ramis pluri-pedalibus cartilagineis virgatis crassis sursum attenuatis lateraliter ramosis, ramis minoribus bis terve compositis, ramulis ultimis setaceis ramelliferis, ramellis roseo-puniceis monosiphoniis mollissimis tenuissimis dichotomis attenuatis axillis acutis divisuris ultimis longissime filiformibus, articulis ramellorum diametro 3–6-plo longioribus, ceramidiis subsessilibus v. breve pedicellatis urceolatis ore prominulo, stichidiis minutis fusiformibus acutis.—*Harv. Alg. Exsic. Austr. n.* 201; *Phyc. Austr. t.* 88.

HAB. In the Tamar, at Point Rapid, *W. H. H.*

DISTRIB. Port Phillip Heads.

Frond sometimes 6 feet long, the branches 3 or 4 feet. *Stem* 1–2 lines in diameter at base, cartilaginous, attenuated upwards. *Branches* lateral, spirally inserted, many times compounded alternately, all the divisions virgate, tapering to the apex. The general circumscription of the larger branches is lanceolate, of the smaller, ovate-acuminate. The *ultimate ramuli* are setaceous, about ½ inch long, and are alone clothed with ramelli, which are of a bright, purplish, rose-red colour, well preserved in drying. The plant may be immersed in fresh-water without injury for a considerable time, a character by which it is readily known from those varieties of *D. villosa* which resemble it in habit. The *ramelli,* though exceedingly soft and flaccid, may be readily removed from paper, and open again in water with facility.

7. **Dasya villosa** (Harv. in Lond. Journ. iii. p. 433; Harv. Ner. Austr. p. 61. t. 20).

HAB. Georgetown, etc., common.

DISTRIB. West and south coasts of Australia, especially in Port Phillip.

An extremely variable plant in size and ramification, as well as in colour, being sometimes dark purplish-red, sometimes bright rosy-purple. It is the softest and most gelatinous of the Australian species, almost instantly decaying in fresh-water, and in this and other respects nearly resembles the northern *D. elegans.*

8. **Dasya Feredayæ** (Harv.); caule elato glabro opaco cartilagineo decomposite ramosissimo, ramis lateralibus virgatis gracilibus quaquaversis iterum et iterum alterne divisis, minoribus nunc virgatis simplicibus nunc ramosis attenuatis ramelliferis, ramellis roseis monosiphoniis undique insertis patentibus vel squarrosis ad apices densioribus dichotomo-multifidis axillis patentibus apice attenuatis, articulis ramellorum diametro 4–6-plo longioribus cylindraceis, ceramidiis . . .?—*Harv. Alg. Exsic. n.* 220.

Var. *β*; ramis ramulisque squarrosis.—*Harv. Alg. Exsic. n.* 221.

HAB. In the Tamar, at and above Georgetown, *Mrs. Fereday, etc.*

Frond 1–2 feet long or more, half a line to a line in diameter at base, set throughout with lateral branches spreading in all directions, the lower long, the upper gradually shorter. *Branches* virgate, three or four times alternately decompound, each set of branches more slender, generally straight and erecto-patent, sometimes squarrose and curved. All the larger branches are glabrous, the lesser ones but sparingly covered with ramelli, the penultimate ones alone thickly ramelliferous; but different specimens differ greatly in the density and copiousness of the ramelli. Every part of the frond is inarticulate, coated with small cells. The *ramelli* are patent, sometimes squarrose, many times dichotomous, attenuated to the points, and their articulations are 3–6 times as long as broad. The *colour* is rosy-red, well preserved in drying. The *substance* is firm, and the plant may be immersed for some time in fresh-water without injury.—I have not seen any fructification.

I first saw some fine specimens of this plant in the collection of Mrs. Fereday, of Georgetown, to whom the species is dedicated, and afterwards I collected it in considerable abundance in the Tamar. It has also been sent in Mr. Gunn's later collections.

9. **Dasya Haffiæ** (Harv.); caule elato villoso opaco cartilagineo decomposite plumoso-pinnato, ramis virgatis distichis subtripinnatis ramulisque patentibus densissime ramelliferis, ramellis roseis undique insertis squarroso-crispatis dichotomo-multifidis axillis patentibus apice acutis vix attenuatis, articulis ramellorum diametro sesqui-subduplo-longioribus, ceramidiis sæpe pinnulos ultimos terminantibus globosis ore porrecto densissime ramellis involucrato-vestitis, stichidiis minutis ovalibus mucronatis.—*Harv. Alg. Exsic. n.* 222.

HAB. Georgetown, rare, *R. Gunn.* Table Cape, *Miss Mackenzie.*

DISTRIB. First found at Western Port, Victoria, *W. H. H.*

Frond 12–18 inches high, and nearly as much in expansion, with a principal undivided or once-forked stem, closely set throughout with patent lateral branches, the lowest of which are longest. These branches are distichous, or nearly so, and are twice or thrice plumoso-pinnate, the pinnæ and pinnules all patent. The *pinnæ* are of unequal lengths, long and short intermixed; the smaller ones are either simple or once pinnate, the larger two or three times decompound. The *main branches* at first are densely ramellose, but become bare with age; all the lesser branches generally retain their villosity. The pinnæ and pinnulæ are densely clothed with curled, intricate, squarrose ramelli, many times dichotomous, not much tapering, but acute at the points, their articulations short. *Ceramidia* generally terminate the shortest of the ramuli, and are hidden in a dense nest of ramelli, which cover over even the walls of the ceramidium. *Stichidia* minute. *Colour* a rosy red, sometimes turning brown in drying. *Substance* soft, but not gelatinous.—The specific name is in honour of *Mrs. M'Haffie*, of Philip Island, Western Port. The specimens from Table Cape are much injured, and in part denuded of ramelli, and may possibly belong to a different but closely allied species.

10. **Dasya Muelleri** (Sond.); caule elato (pedali et ultra) crasso villis stipato subdichotomo, segmentis ramiferis, ramis secundariis longissimis (1–2-pedalibus) caule multo tenuioribus glabris corticatis simplicibus inferne sæpe denudatis superne pulcherrime plumoso-pinnatis, pinnis alternis crebris horizontalibus plus minus ecorticatis polysiphoniis iterum pinnulatis, pinnulis oligosiphoniis brevissimis ramelliferis, ramellis dichotomis attenuatis obtusis, articulis diametro 2–4-plo longioribus, ceramidiis magnis pedicellatis

inflato-ovatis, ore prominulo, stichidiis minutis oblongis acutis.—*Harv. Phyc. Austr. t.* 31. D. plumigera, *Harv. in Trans. R. I. Acad.* xxii. *p.* 543; *Harv. Alg. Exsic. Auct. n.* 208.

HAB. Georgetown.

DISTRIB. West and south coasts of Australia.

11. **Dasya Archeri** (Harv.); caule pusillo a basi in ramos numerosos diviso, ramis setaceis elongatis simplicibus pellucide articulatis polysiphoniis crebre pinnatis circumscriptione ovato-lanceolatis, pinnis distichis alternis ramello pectiniformi reflexo-squarroso suffultis simplicibus ramelliferis, ramellis sæpius alterne geminis divaricato-patentibus pectinato-multifidis (a latere interiore ramosis) mucronatis, articulis ramellorum diametro sesquilongioribus.

HAB. Georgetown, rare, *Archer, R. Gunn.*

Three to four inches high, divided from the base into numerous branches. *Branches* as thick as hog's-bristle, pellucidly articulate, often naked near the base, closely pinnated and feather-like beyond the middle. Some of the larger branches divide, and each division is then pinnate. *Pinnæ* $\frac{1}{2}$–$\frac{3}{4}$ inch long, distichous, patent, about a line apart, each subtended by a ramellus, which is pectinate on its inner face. *Ramelli* mostly in pairs alternately, robust, patent or strongly reflexed, pectinate, the teeth of the comb horizontal, little tapering, but suddenly mucronate at the apex. *Colour* rosy-red.—This looks almost like a small specimen of *D. Muelleri*, but differs in the nature of the ramelli, the greater transparency of the branches, the subtending ramellus to the pinnæ, etc. We have only seen three specimens.

12. **Dasya verticillata** (Harv. in Lond. Journ. Bot. iii. p. 434; Harv. Ner. Austr. p. 64. t. 24).

HAB. Georgetown, rare, *Gunn, W. H. H.*

13. **Dasya bolbochæte** (Harv. in Lond. Journ. Bot. iii. p. 434; Harv. Ner. Austr. p. 65. t. 25).

HAB. In the Tamar, above Georgetown, common.

DISTRIB. Found at Western Port, Victoria.

One of the strongest-growing and most bushy of the genus. The figure in Ner. Austr. only represents part of a small branch.

14. **Dasya hormoclados** (J. Ag. in Linnæa; Harv. Ner. Austr. p. 65. t. 26).—Dasya ceramioides, *Harv. Ner. Austr. p.* 66. *t.* 26.

HAB. Abundant in the Tamar, above and below Georgetown. Southport, *C. Stuart.*

DISTRIB. South coast of Australia.

After an examination of a very extensive suite of specimens, I am unable to fix a clear limit between *D. ceramioides* and *D. hormoclados*, here united together.

15. **Dasya pellucida** (Harv. Ner. Austr. p. 67. t. 27).

HAB. A single specimen at Georgetown, *R. Gunn.*

DISTRIB. Cape of Good Hope, Port Phillip.

The specimen agrees with those from Port Phillip, but is of a larger size than those from the Cape of Good Hope, on which the species was founded.

16. **Dasya crouanioides** (Sond.); "fronde continua tenuissima monosiphonia, ramis alternis patentibus, ramulis sensim minoribus, omnibus cum fronde primaria fasciculis ramellorum brevissimorum verticillatim sejunctorum vestitis, verticillis superioribus confluentibus, ramellis articulatis callithamnioideis divaricato-ramosissimis, articulis diametro subduplo longioribus."—*Sond. in Linn.* xxv. *p.* 703.

HAB. Tasmania, *Stuart.*

We know nothing of this plant, which is said closely to resemble *Crouania attenuata*. Can it be a *Crouania*, and not a *Dasya?* Perhaps *Crouania insignis*, Harv.?

Tribe II. *LAURENCIACEÆ.*

Gen. LII. ASPARAGOPSIS, *Mont.*

(Mont. Phyc. Can. xv. Endl. 3rd Suppl. p. 43. Harv. Ner. Austr. p. 88. Kütz. Sp. Alg. p. 802. J. Ag. Sp. Alg. ii. p. 774.—*Lictoria*, J. Ag. Alg. Medit. p. 116.)

1. **Asparagopsis armata** (Harv.); surculo ultrasetaceo parum ramoso repente caules plures emittente, caulibus erectis ramosis usque ad basin ramellis obsitis v. brevissime nudis, ramis secundariis consimilibus ad basin armatis ramulis subternis nudis retrorsum aculeatis, penicellis ramellorum subdistichis ambitu ovatis acutis, pinnellis oppositis, ceramidiis globosis pedunculo cylindraceo.—*Harv. in Trans. R. I. Acad.* xxii. *p.* 544. A. Delilei, *Harv. Ner. Austr. p.* 88 (*the figure, plate* 35, *not characteristic*).

Hab. Common everywhere.

Distrib. Abundant along the west, south, and east shores of Australia.

Gen. LIII. DELISEA, *Lamour.*

(Lamour. Dict. Sc. Nat. xiii. p. 41. Harv. Ner. Austr. p. 88. Kütz. Sp. Alg. p. 770. J. Ag. Sp. Alg. ii. p. 779.)

1. **Delisea elegans** (Mont.; Harv. Ner. Austr. p. 89. t. 34; Kütz. Sp. Alg. p. 770; J. Ag. Sp. Alg. ii. p. 781).—Bonnemaisonia elegans, *Ag. Syst. p.* 246.

Hab. Georgetown, common.

Distrib. South coast of New Holland.

2. **Delisea pulchra** (Mont.; Harv. Ner. Austr. p. 89; Kütz. Sp. Alg. p. 770; J. Ag. Sp. Alg. ii. p. 784).—Bowiesia pulchra, *Grev.*

Hab. Port Arthur, rare, *W. H. H.* South Port, *C. Stuart.*

Distrib. West Australia. New South Wales, common at Newcastle. Kerguelen's Land.

3. **Delisea hypnæoides** (Harv.); fronde filiformi gracili flaccida flexuosa decomposita ramosissima, ramis erecto-patentibus, primariis longissime virgatis, secundariis tertiariisque minoribus, omnibus distiche ciliatis, ciliis filiformi-subulatis distantibus alternis vel secundis, sæpe uno latere pectinatis, ceramidiis infra apices ramulorum in rachide sessilibus lateralibus ovatis, ore laterali.—*Harv. Alg. Austr. Exsic. n.* 248.

Hab. Georgetown, very rare, *Rev. I. Fereday.*

Distrib. Found at Western Port, Victoria, *W. H. H.*

Frond 2 feet long or more, very soft and flaccid, twice as thick as hog's-bristle, excessively branched in an alternate manner, the main branches long and virgate, the rest successively shorter. All parts are more or less flexuous, or gracefully bending. The *cilia* are longer, more filiform, more distant, and less regularly placed than in *D. elegans*, and in the lesser division a cilium is frequently lengthened to twice or thrice the ordinary length, and then pectinated on its inner face. The whole plant has more the aspect of a *Hypnea* than of a *Delisea*, but the fructification is exactly that of *D. elegans.*

Gen. LIV. PTILONIA, *J. Ag.*

(J. Ag. Sp. Alg. ii. p. 773.)

1. **Ptilonia australasica** (Harv.); fronde in parte inferiori costa crassa donata sursum costula

tenuissima percursa vel omnino ecostata lineari plana decomposite pinnata, pinnis pinnulisque alternis patentibus axillis rotundatis, ultimis oblongis obtusis simplicibus v. pauce dentatis, ceramidiis lateralibus, axillaribus vel terminalibus nunc fasciculatis globoso-inflatis longiuscule pedicellatis.—*Harv. Alg. Exsic. n.* 244. (Tab. CXC. *A.*)

Hab. Georgetown, rare, *R. Gunn, W. H. H.* Southport, *C. Stuart.*

Distrib. South coast of Australia.

Frond a foot or more in length, and as much in expansion, about a line or a line and a half in breadth in all parts, furnished for some inches above the base with a thick cartilaginous midrib, which is gradually dissipated upwards, the upper half of the frond being ribless, and quite flat, but traversed by a very slender, internal, medial vein, which is not always visible, though strongly marked in the broader and more luxuriant specimens. The *ramification* is distichous, and about thrice pinnate; the primary branches or pinnæ elongate, few and distant; the secondary 1–2 inches long, about half an inch asunder, and regularly alternating; the tertiary short, with one or two tooth-like incisions. All the *branches* and their divisions are remarkably patent, with rounded angles. The *apices* are blunt, and frequently as if truncate. The *ceramidia* are as large as mustard-seeds, globose, on stalks as long as, or longer than themselves, and are very irregularly distributed over the frond, being sometimes terminal, sometimes on the sides of the smaller ramuli, sometimes in the axils, and sometimes actually fasciculate on different parts. Their walls are very thick, and they contain a large tuft of clavato-pyriform spores. The colour of the frond is of a deep clear red, similar to that of many *Plocamia.*—Mr. Stuart's specimens from Southport are broader than that represented in our figure, and the frond is everywhere traversed by a slender medial vein, which we do not find obvious in the Georgetown plant. It is possible we may confound two species; but as their vein is less strongly marked in some individuals than in others from the same locality, we think perhaps it may exist in all, but from some fault in the drying may have been obliterated.—Plate CXC. *A.* Fig. 1, *Ptilonia australasica, nat. size;* 2, a fragment, with a pedicellate ceramidium; 3, tuft of spores from the same; 4, some spores separated:—the latter figures more or less highly *magnified.*

Gen. LV. CLADHYMENIA, *Harv.*

(Hook. and Harv. Alg. N. Zeal. in Lond. Journ. Bot. iv. p. 54. Harv. Ner. Austr. p. 87. Kütz. Sp. Alg. p. 879. J. Ag. Sp. Alg. ii. p. 771.)

1. **Cladhymenia conferta.**—Dictymenia conferta, *Harv. Ner. Austr. p.* 29. *t.* 8. Delesseria conferta, *Ag. Sp. Alg.* i. *p.* 177. Fucus confertus, *R. Br. in Turn. Hist. t.* 184.

Var. *β. foliifera;* ramis folia lanceolata tenui-membranacea ex margine apicibusque emittentibus.

Hab. Georgetown, *R. Gunn, W. H. H.* Var. *β.* Southport, *C. Stuart.*

Distrib. South coasts of New Holland.

During my recent visit to Australia, I ascertained the tetrasporic fruit of this plant, and am thereby compelled to remove it from *Dictymenia* to the present genus. The tetraspores form marginal sori, continued for some distance along the edge of the frond. Var. *β* is a remarkable variety, resembling at first sight some states of *Delesseria hypoglossum.* It is connected with the common form by specimens of intermediate character.

Gen. LVI. LAURENCIA, *Lamour.*

(Lamour. Ess. p. 42. Grev. Alg. Brit. p. 108. Harv. Ner. Austr. p. 81. J. Ag. Sp. Alg. ii. p. 740.)

1. **Laurencia Forsteri** (Grev.; Harv. Ner. Austr. p. 85; J. Ag. Sp. Alg. ii. p. 744).—Fucus Forsteri, *Turn. Hist. t.* 77.

Hab. On *Zostera,* etc., common.

Distrib. All along the coasts of New Holland.

2. **Laurencia filiformis** (Mont. Pôl. Sud, p. 125; Harv. Ner. Austr. p. 84; J. Ag. Sp. Alg. ii. p. 745).—Chondria filiformis, *Ag. Sp. Alg.*

HAB. Tasmania, according to *Montagne.*

DISTRIB. West coast of New Holland.

We are not acquainted with this plant.

3. **Laurencia obtusa** (Lamour.; Grev. Alg. Brit. p. 111; Harv. Phyc. Brit. t. 148; J. Ag. Sp. Alg. ii. p. 750).—Fucus obtusus, *Turn. Hist. t.* 21; *Eng. Bot. t.* 1201.

HAB. Georgetown.

DISTRIB. Atlantic shores of Europe and America. Tropical seas.

4. **Laurencia Tasmanica** (Hook. fil. et Harv. in Harv. Ner. Austr. p. 84).—L. papillosa, *Harv. in Lond. Journ. Bot.* vi. *p.* 401 (*excl. syn.*).

HAB. Plentiful at Georgetown.

5. **Laurencia botryoides** (Gaill.; Harv. Ner. Austr. p. 82).—Fucus botryoides, *Turn. Hist. t.* 178.

HAB. Georgetown, *Gunn.* Derwent, *Ewing, Oldfield.* Southport, *Stuart.*

6. **Laurencia elata** (Harv. in Hook. Lond. Journ. Bot. vi. p. 401; Harv. Ner. Austr. p. 81. t. 33; Kütz. Sp. Alg. p. 856; J. Ag. Sp. Alg. ii. p. 766).

HAB. Georgetown and Port Arthur.

DISTRIB. All along the coasts of New Holland.

Gen. LVII. CHAMPIA, *Ag.*

(Harv. Ner. Bor. Amer. ii. p. 75.—*Champiæ* et *Lomentariæ* sp., Auct.)

1. **Champia Tasmanica** (Harv. in Hook. Lond. Journ. Bot. iii. p. 407. t. 19; Harv. Ner. Austr. p. 78; J. Ag. Sp. Alg. ii. p. 370).

HAB. Georgetown, *Gunn, W. H. H., etc.* Derwent, *Oldfield.*

2. **Champia affinis** (Harv.).—Chylocladonia affinis, *Hook. et Harv. Lond. Journ. Bot.* vi. *p.* 402; *Harv. Ner. Austr. p.* 79. *t.* 29. Lomentaria affinis, *Kütz. Sp. Alg. p.* 863; *J. Ag. Sp. Alg.* ii. *p.* 730.

HAB. Common at Georgetown and elsewhere.

DISTRIB. Shores of New Holland and New Zealand.

3. **Champia obsoleta** (Harv.); fronde pyramidali paniculatim ramosa, caule subsimplici intestiniformi obsoletissime constricta v. subcontinua, ramis lateralibus quaquaversis oppositis vel verticillatis crebre ramosis, ramulis decompositis, articulis ramulorum vix conspicuis diametro sesquilongioribus, ceramidiis ovatis sessilibus.—*Harv. Alg. Exsic. n.* 252.

HAB. Georgetown. Southport, *C. Stuart.*

DISTRIB. Port Fairy, Victoria, *W. H. H.*

Perhaps only a variety of *C. affinis*, but the habit is somewhat different, and the articulations difficult to be seen in any part of the frond, owing to the thickness of the outer walls. The plant grows on tidal rocks, in shallower water than *L. affinis*, and is generally, from exposure to sunlight, of a dull livid-green, tipped with purple.

4. **Champia parvula** (Harv. Ner. Bor. Amer. pt. 2. p. 76).—Chylocladia parvula, *Grev.; Harv. Phyc. Brit. t.* 210; *Ner. Austr. p.* 80. Lomentaria parvula, *J. Ag. Sp. Alg.* ii. *p.* 729.

HAB. Georgetown.

DISTRIB. Northern Atlantic and Mediterranean. Coasts of New Holland and New Zealand.

Tribe 3. *WRANGELIACEÆ.*

Gen. LVIII. WRANGELIA, *Ag.*

(Ag. Sp. Alg. ii. p. 136. Endl. 3rd Suppl. p. 35. Kütz. Sp. Alg. 664. J. Ag. Sp. Alg. ii. p. 703.)

1. **Wrangelia plumosa** (Harv. Lond. Journ. Bot. iii. p. 450; Kütz. Sp. Alg. 664; J. Ag. Sp. Alg. ii. p. 706).

Hab. Tidal rocks, in rock-pools, very abundant.

Distrib. Port Phillip and Western Port, etc., *W. H. H.*

2. **Wrangelia nobilis** (Hook. fil. et Harv. in Lond. Journ. Bot. iii. p. 411; Kütz. Sp. Alg. p. 665; J. Ag. Sp. Alg. ii. p. 709). Griffithsia (Halurus) radiciformis, *Hook. fil. et Harv. l. c.; Kütz. Sp. Alg. p.* 663; *J. Ag. Sp. Alg.* ii. *p.* 91 (*the winter and fructiferous state*).

Hab. Common at and above Georgetown.

The summer and winter states of this beautiful species are so dissimilar that, when first we received specimens from Mr. Gunn, we described them under two different genera, founding our *W. nobilis* on the summer form, and our *Griffithsia radiciformis* on the winter one, and in this error we have been followed by Agardh and Kützing. Extended observations on the living plant, and the possession of multitudes of specimens in every intermediate stage, have now demonstrated to us the identity of the supposed two species, and the discovery of both kinds of fruit confirms the position in *Wrangelia* of the united forms. In the young or summer state all the younger parts of the frond are clothed with very delicate rosy-red ramelli, two lines in length, which give a feathery character to the branches. The tomentum on the branches at this season is also close-pressed and silky. At a later stage the rosy ramelli become much less abundant, and at length are confined to the tips of the smaller ramuli, while the tomentum of the branches becomes more shaggy and uneven. Finally, the rosy ramuli altogether fall off, and the plant puts on the form described as *Griffithsia* (*Halurus*) *radiciformis*, being then in texture, substance, and general aspect extremely unlike the delicately pencilled and feathered young plant. It is at this stage of growth that the fruit of both kinds is produced. The *cystocarps*, exactly similar in structure to those of other *Wrangeliæ*, are borne on longish pedicels issuing from the older branches. The *tetraspores* are densely aggregated in grape-like clusters, surrounded by involucral ramuli, and are borne on little pedicels rising from the branches.

3. **Wrangelia Jeannerettii** (Hook. fil. et Harv. in Lond. Journ. Bot. vi. p. 411; J. Ag. Sp. Alg. ii. p. 709).

Hab. Port Arthur, *Jeannerett.*

We are not in a position to throw any more light on this species.

4. **Wrangelia crassa** (Hook. fil. et Harv. in Lond. Journ. Bot. vi. p. 410; J. Ag. Sp. Alg. ii. p. 706).

Hab. Georgetown, *R. Gunn, W. H. H.*

Distrib. Port Phillip, *W. H. H.*

5. **Wrangelia protensa** (Harv.); fronde gelatinosa elata articulata ecorticata inferne plus minus stuposa decomposite ramosissima, ramis virgatis longe protensis alterne v. opposite ramosis, ramis minoribus ramulisque simplicibus attenuatis ad genicula opposita v. verticillatim ramellosis, ramellis erecto-appressis strictis vix attenuatis obtusis basi pinnulatis, rachide longe excurrente, tetrasporis ad latera pinnularum sessilibus globosis, articulis ramorum longissimis, ramellorum diametro 4–6-plo longioribus.—*Harv. Alg. Austr. Exsic. n.* 263.

Hab. Georgetown, *R. Gunn.*

Distrib. Port Phillip, *W. H. H.*

Fronds 6–12 inches long, excessively and densely branched, the principal branches long and virgate, several times compound, the ultimate branches an inch or two in length, simple, attenuated. All the branches and their divisions are very erect. The older parts of the frond, though pellucidly articulate and ecorticate, become shaggy with stupose filaments, which issue from the dissepiments, and are deflected downwards like rootlets. Every articulation of the branches and ramuli bears a pair of opposite ramelli, which are very erect or appressed, simple or branched from the base, often pinnulated in the lower part, but always with a long excurrent point. *Tetraspores* are scattered on the pinnulæ of the ramelli. *Cystocarps* unknown. *Substance* gelatinous and soft. *Colour* a rosy-red.

6. **Wrangelia mucronata** (Harv.); dense cæspitosa, frondibus roseis rigidiusculis capillaribus dichotome ramosissimis ecorticatis articulatis ad genicula verticillatim ramellosis, ramellis subternis furcatis v. trifurcatis cellula terminali minuta subulata acute mucronatis, tetrasporis in cymis subapicalibus dispositis, articulis ramorum longissimis, ramellorum diametro 6–8-plo longioribus. (Tab. CXCI. *B.*)

Hab. Tasmania, *R. Gunn*. (Very rare?)

Fronds 6–8 inches long, densely tufted, capillary, of nearly the same diameter throughout, pellucidly articulate, excessively branched in a more or less regularly dichotomous manner. Every dissepiment bears a whorl of mostly three ramelli, about a line in length, and two or three lines distant. These are generally forked, or often trifid, each arm of the fork being composed of one long cell, tipped by a minute, thorn-like terminal cell. The *tetraspores* are borne in little cymes, formed out of the ramelli, near the ends of the branches. The *colour* is a deep rosy-red. The *substance* is membranous, and the plant only imperfectly adheres to paper in drying.—This appears to be a very distinct species, allied to *W. myriophylloides*, but abundantly different.—Plate CXCI. *B.* Fig. 1, a tuft, *nat. size;* 2, frustule of a branch, with whorled ramelli; 3, a ramellus; 4, a fertile ramellus, with tetraspores; 5, tetraspore:—the latter figures *magnified.*

7. **Wrangelia setigera** (Harv.); fronde crassiuscula cartilaginea corticata decomposite ramosissima, ramis elongatis pluries alterne decompositis erecto-patentibus, ramulis plus minus articulatis ad genicula verticillatim ramellosis, ramellis setaceis simplicissimis patentibus cylindraceis obtusis, articulis ramorum diametro æqualibus ramellorum subtriplo longioribus, cystocarpiis secus ramos sparsis pedicellatis, tetrasporis ad latera ramellorum sessilibus.—Spyridia filamentosa, β verticillata, *Harv. in Lond. Journ.* iii. *p.* 449. Spyridia Tasmanica, *Kütz. Sp. Alg.! p.* 666; *J. Ag. Sp. Alg.* ii. *p.* 342! (Tab. CXCI. *A.*)

Hab. Georgetown, *R. Gunn, W. H. H.*

Distrib. Port Phillip, *W. H. H.*

Frond 12–18 inches long, much branched and bushy. In external habit it strongly resembles *Spyridia filamentosa*, for a variety of which plant we once held it. The *cystocarpic* fruit, now first ascertained, is however that of a *Wrangelia;* with no other recorded species of which genus has the present species much affinity.—Plate CXCI. *A.* Fig. 1, a frond, the *natural size;* 2, frustule of a branch, with tetrasporiferous ramelli; 3, a ramellus with tetraspores; 4, frustule of a branch with a cystocarp; 5, spores and paranemata from the same; 6, a paranema:—the latter figures *magnified.*

Tribe IV. *CORALLINEÆ.*

Gen. LIX. AMPHIROA, *Lx.*

(Lamour. Cor. Flex. p. 294. Harv. Ner. Austr. p. 95. J. Ag. Sp. Alg. ii. 529.)

1. **Amphiroa charoides** (Lamour.; Harv. Ner. Austr. p. 96. t. 39; J. Ag. Sp. Alg. ii. p. 539).

Hab. Sea-shores, common.

Distrib. Australia.

2. **Amphiroa stelligera** (Lamarck; Harv. Ner. Austr. p. 96; J. Ag. Sp. Alg. ii. p. 539).

Hab. Common on *Amphibolis antarctica.*

Distrib. Australia.

3. **Amphiroa Wardii** (Harv. Ner. Austr. p. 99. t. 38).—Arthrocardia Wardii, *Aresch. in J. Ag. Sp. Alg.* ii. *p.* 551.

Hab. Five-mile Bluff, near Georgetown, *R. Gunn.*

Distrib. South and east coasts of Australia.

4. **Amphiroa (Cheilosporum) elegans** (Hook. fil. et Harv. Ner. Austr. p. 101. t. 38; J. Ag. Sp. Alg. ii. p. 546).

Hab. Five-mile Bluff, *Gunn.*

Distrib. Native of New Zealand and New South Wales.

Gen. LX. CORALLINA, *Linn.*

(Lamour. Cor. Flex. p. 275. Harv. Ner. Austr. p. 103. J. Ag. Sp. Alg. ii. p. 560.)

1. **Corallina officinalis** (Linn.; Harv. Ner. Austr. p. 104; Harv. Phyc. Brit. t. 222; J. Ag. Sp. Alg. ii. p. 562).

Hab. At Five-mile Bluff, and at Brown's River, *R. Gunn.*

Distrib. Native of the Northern and Southern Oceans.

Gen. LXI. JANIA, *Lamour.*

(Lamour. Cor. Flex. p. 266. Harv. Ner. Austr. p. 104. J. Ag. Sp. Alg. ii. 553.)

1. **Jania Cuvieri** (Dcne.; Harv. Ner. Austr. p. 105; J. Ag. Sp. Alg. ii. p. 572).

Hab. Rocky sea-shores.

Distrib. Native of New Holland and New Zealand.

2. **Jania micrarthrodia** (Lamour.; Harv. Ner. Austr. p. 107; J. Ag. Sp. Alg. ii. p. 555).—J. tenuissima, *Sond. Harv. Ner. Austr. t.* 40.

Hab. On *Algæ,* in tide-pools, common.

Distrib. Australia generally.

Gen. LXII. MASTOPHORA, *Dcne.*

(Dcne. An. Sc. Nat. 1842, vol. ii. p. 126. Harv. Ner. Austr. p. 108. J. Ag. Sp. Alg. ii. p. 525.)

1. **Mastophora canaliculata** (Harv.); fronde bi-triunciali flabelliformi fastigiata multipartita, segmentis digitato-multifidis, laciniis linearibus subtus canaliculatis lævibus rubris supra convexis transversim zonatis, apicibus parum dilatatis obtusis margine plano, ceramidiis infra apices dense aggregatis.—Mastophora, *n. sp.?, Harv. Alg. Aust. Exsic. n.* 443.

Hab. Tasmania, *C. Stuart.*

Distrib. Coast of Victoria, at Port Fairy, *W. H. H.*

Fronds 2–3 inches high, flabelliform and fastigiate, deeply cut into innumerable narrow-linear laciniæ, about a line or a line and a half in width, flat and somewhat midribbed in the lower portion of the frond, convex above and channelled on the lower surface in the upper portion. Principal segments 4 or 5, flabellato-digitate, multifid, their divisions irregularly di-, tri-, or polychotomous. *Apices* not much expanded, blunt, with a flat margin. Colour

of both surfaces a deep dull-red. *Conceptacles* hemispherical, several closely clustered together near the tops of the branches.

This appears to be a distinctly-marked species.

Gen. LXIII. MELOBESIA, *Lamour.*

(Lamour. Cor. Flex. p. 313. Harv. Ner. Austr. p. 109.—*Melobesia* et *Lithothamnion*, Auct. Aresch. in J. Ag. Sp. Alg. ii. p. 519.)

Several *forms* (we can hardly call them *species*) referable to this group occur on the rocky coasts, but they have not yet been carefully collected. The minute kinds, *M. membranacea*, *M. farinosa*, *M. verrucata*, *M. pustulata*, and *M. Patena*, are parasitical on several *Algæ*, on *Zostera*, etc.

Tribe V. *SPHÆROCOCCOIDEÆ.*

Gen. LXIV. DELESSERIA, *Lamour.*

(Grev. Alg. Brit. p. 71. Harv. Ner. Austr. p. 114. J. Ag. Sp. Alg. ii. p. 677.—*Hemineura*, Harv. Ner. Austr. p. 116. Fl. N. Zeal. p. 240.)

1. **Delesseria Lyallii** (Hook. fil. et Harv.; Fl. Ant. ii. p. 471. t. 176; J. Ag. Sp. Alg. ii. p. 693; Harv. Ner. Austr. p. 114).

Hab. In the Tamar, especially at Point Rapid.

Distrib. Falkland Islands and Kerguelen's Land.

2. **Delesseria Tasmanica** (F. Muell.); fronde costata foliis a costa prorumpentibus ramosa, foliolis lineari-oblongis basi et apice obtusis venis pellucidis a costa pinnatim abeuntibus notatis, cystocarpiis sorisque tetrasporarum in sporophyllis propriis a costa exeuntibus evolutis. (Tab. CXC. *B.*)

Hab. In the Tamar, at and above Georgetown. Also at Port Arthur.

Primary fronds 1–2 inches long, half an inch wide, very obtuse at each end, membranous, entire, traversed by a strong, cylindrical midrib, the membrane marked with pellucid striæ running obliquely from the midrib to the margin. By continuous hypophyllous branching, the compound frond at length becomes 6–8 or 12 inches long, and as much in expansion, and is excessively branched and bushy, consisting of oblong, obtuse leaves similar to that of the primary frond. The leaves are frequently opposite. *Colour* a full carmine-lake. *Substance* membranaceous, resisting the action of fresh-water. Both cystocarps and tetraspores are borne in minute accessory frondlets that spring from the midribs of the larger leaves.

A handsome and well-marked species. It most resembles luxuriant specimens of *D. ruscifolia*, but differs essentially from that species by the very different evolution of the fructification. The frond is also of a much firmer substance, and adheres less strongly to paper.—Plate CXC. *B.* Fig. 1, a frond, the *natural size*; 2, spore-leaf, with tetraspores; 3, a tetraspore; 4, spore-leaf with conceptacle; 5, section of conceptacle:—the latter figures *magnified.*

3. **Delesseria crassinervia** (Mont. Pôl. Sud, p. 164. t. 8. f. 1; Harv. Ner. Austr. p. 115; J. Ag. Sp. Alg. ii. p. 694).

Hab. Sullivan's Cove, *Dr. Lyall.*

Distrib. Antarctic Coasts and New Zealand.

4. **Delesseria? Leprieurii** (Mont. An. Sc. Nat. ii. Ser. xiii. p. 196. t. 5. f. 1; Harv. Ner. Austr. p. 116; J. Ag. Sp. Alg. ii. p. 682; Harv. Ner. Bor. Amer. ii. p. 98. t. 22 *C*).

Hab. Abundant on tidal rocks near the mouth of the Tamar.

DISTRIB. South coast of New Holland. New Zealand. Demerara. Estuaries of North American Rivers. Bonin Islands, near Japan, in *fresh-water* rivulets.

5. **Delesseria endiviæfolia** (Hook. fil. et Harv. Lond. Journ. vi. p. 403; J. Ag. Sp. Alg. ii. p. 697; Harv. Ner. Austr. p. 115).

HAB. Georgetown.

DISTRIB. South coasts of New Holland.

6. **Delesseria (Hemineura) frondosa** (Hook. fil. et Harv. Lond. Journ. vi. p. 403; Harv. Ner. Austr. p. 116. t. 45; J. Ag. Sp. Alg. ii. p. 689).

HAB. Abundant in the Tamar, etc.

DISTRIB. South coasts of New Holland.

A most variable species, putting on a thousand different forms in different localities. Sometimes the frond is broadly-ovate, little divided, and merely crenate-lobed round the margin; sometimes the margin is excessively crisped, and deeply cut into innumerable crowded lobes. Sometimes the frond is narrow-linear, pinnatifid or bipinnatifid. The margin is sometimes quite entire, sometimes sharply serrate. Size, substance, and colour, are equally variable.

Gen. LXV. NITOPHYLLUM, *Grev.*

(Grev. Alg. Brit. p. 77. Harv. Ner. Austr. p. 118. J. Ag. Sp. Alg. ii. p. 651.)

1. **Nitophyllum crispum** (Kütz. Sp. Alg. p. 868; J. Ag. Sp. Alg. ii. p. 662).—N. punctatum, *Harv. in Lond. Journ. and Ner. Austr. p.* 118.

HAB. Very abundant at and above Georgetown.

DISTRIB. Coast of Victoria, rather rare.

2. **Nitophyllum stipitatum;** stipite anguste cuneato elongato costato in frondem roseam subpalmatifidam abeunte, costis in basi segmentorum mox evanescentibus, segmentis latocuneatis profunde incisis v. semipartitis medio incrassatis, margine simplici, soris orbicularibus per totam frondem sparsis.

HAB. East coast, *R. Gunn, Esq.*

Stipes nearly an inch high, strongly ribbed, narrow, cuneate, widening into the base of a subpalmate frond, 2–4 inches in expansion. *Segments* of the frond costate at base, broadly cuneate, irregularly cleft. *Sori* scattered over the whole surface.

3. **Nitophyllum Gunnianum** (Harv. Lond. Journ. vi. p. 403; Harv. Ner. Austr. p. 120. t. 47; J. Ag. Sp. Alg. ii. p. 663).

HAB. Georgetown, common.

DISTRIB. Heads of Port Phillip.

The figure in Ner. Austr. is very incorrectly coloured. The frond, when fresh, is of a full, but rather dull-red colour. If dried without previous steeping in fresh-water, it becomes very dark and brown.

4. **Nitophyllum affine** (Harv. Lond. Journ. iii. p. 447; J. Ag. Sp. Alg. ii. p. 657; Harv. Ner. Austr. p. 119).

HAB. Georgetown.

DISTRIB. Coast of Victoria.

5. **Nitophyllum multipartitum** (Hook. fil. et Harv. Lond. Journ. vi. p. 404; Harv. Ner. Austr. p. 121; J. Ag. Sp. Alg. ii. p. 664).

HAB. Georgetown. Brown's River, etc.

DISTRIB. Coast of Victoria.

6. **Nitophyllum multinerve** (Hook. fil. et Harv. Lond. Journ. iv. p. 255; Fl. Antarct. i. p. 473; Harv. Ner. Austr. p. 119; J. Ag. Sp. Alg. ii. p. 666).

Hab. Derwent, *Mr. Oldfield.* Southport, *C. Stuart.*

Distrib. Antarctic shores and New Zealand.

Gen. LXVI. GRACILARIA, *Grev.*

(Grev. Alg. Brit. p. 121. J. Ag. Sp. Alg. ii. p. 584.—*Plocaria*, Endl. 3rd Suppl. p. 50.)

1. **Gracilaria confervoides** (Grev. Alg. Brit. p. 123; Harv. Phyc. Brit. t. 65; J. Ag. Sp. Alg. ii. p. 587).—Fucus confervoides, *Turn. Hist. t.* 84; *E. Bot. t.* 1668.

Hab. Georgetown. A depauperated variety in the rivulet of brackish water.

Distrib. Cosmopolitan.

Gen. LXVII. MELANTHALIA, *Mont.*

(Mont. An. Sc. Nat. 1843. Kütz. Sp. Alg. p. 784. J. Ag. Sp. Alg. ii. p. 611.)

1. **Melanthalia obtusata** (J. Ag. Sp. Alg. ii. p. 614; Harv. Phyc. Austr. t. 25).—M. Billardieri, *Mont. Kütz. Sp. Alg.* 784. Fucus obtusatus, *Labill. Nov. Holl. t.* 255; *Turn. Hist. t.* 145. β. intermedia, *Harv. Phyc. Austr. t.* 25. *f.* 2. M. abscissa, *Hook. and Harv. in Lond. Journ.* iv. *p.* 548 (*excl. syn.*).

Hab. Northern coast, and islands in Bass's Straits. β. Port Arthur, *Dr. Jeannerett.* Southport, *C. Stuart.*

Distrib. South coast of Australia.

Gen. LXVIII. DICRANEMA, *Sond.*

(Sond. in Bot. Zeit. 1845, p. 56. J. Ag. Sp. Alg. ii. p. 633.)

1. **Dicranema Grevillii** (Sond. in Bot. Zeit. 1845, p. 56; J. Ag. Sp. Alg. ii. p. 634).—Gracilaria pumila, *Grev. in Ed. Journ.* iii. *p.* 338, *cum ic.*

Hab. Flinders' Island, *Dr. Milligan.*

2. **Dicranema? furcellatum** (Hook. fil. et Harv. in Lond. Journ. vi. p. 405; J. Ag. Sp. Alg. ii. 635).

Hab. Port Arthur, *Dr. Jeannerett, Rev. Mr. Ewing, W. H. H.* Tasmania, *C. Stuart.*

Until the fruit of this plant shall have been found, the genus must remain doubtful. The habit is that of a *Dicranema*, but the structure of the frond does not exactly accord with that of the other species.

Gen. LXIX. PHACELOCARPUS, *Endl. et Dies.*

(Endl. et Dies. Bot. Zeit. 1845, p. 290. J. Ag. Sp. Alg. ii. p. 646.—*Ctenodus*, Kütz. Phyc. Gen. p. 407.)

1. **Phacelocarpus Labillardieri** (J. Ag. Sp. Alg. ii. p. 648).—Ctenodus Labillardieri, *Kütz. Phyc. Gen. p.* 407. *t.* 58. *f.* 2; *Hook. fil. et Harv. Lond. Journ.* iv. 549. Fucus Labillardieri, *Turn. Hist. t.* 137.

Hab. Sea-shores, common.

Distrib. West, south, and east coasts of Australia. New Zealand.

2. **Phacelocarpus complanatus** (Harv.); fronde angusta plano-compressa immerse v. obsolete costata decomposita, ramis ramulisque pectinatim pinnatisectis, lacinulis subulatis distichis, nematheciis minutis hemisphæricis infra apices lacinularum sessilibus.—*Harv. Alg. Austr. Exsicc. n.* 306.

Hab. Southport, *C. Stuart.*

Distrib. Coast of Victoria.

More slender than *P. Labillardieri*, with flatter, less distinctly-ribbed branches, and readily known, when in fruit, by the position of the *nemathecia*, which are sessile near the tips of the marginal pectinate teeth or lacinulæ. The Tasmanian specimens are not so broad as those from Victoria, and are more deeply inciso-pectinate, but they perfectly agree in the more important characters of the fructification.

Tribe VI. *SQUAMARIEÆ.*

Gen. LXX. PEYSSONNELIA, *Dcne.*

(Dcne. Pl. Arab. p. 168. Endl. 3rd Suppl. p. 38. Kütz. Phyc. p. 384. J. Ag. Sp. Alg. ii. p. 499.)

1. **Peyssonnelia rubra** (J. Ag. Sp. Alg. ii. p. 502).—Zonaria rubra, *Grev. in Lin. Trans.* 15. ii. *p.* 340. P. orbicularis, *Kütz. Phyc. p.* 385.

Hab. On stones: at Georgetown.

Distrib. Mediterranean. Pacific Ocean.

I have ventured to refer the Van Diemen's Land specimens to *P. rubra*, a species of the Mediterranean, from which perhaps a more accurate examination of authentic specimens would separate them. The general habit of our Tasmanian species is that of *P. rubra*, but the size is greater, and the substance less thin and delicate. I also found this plant at Rottnest Island, W. Australia, and in Port Jackson, and have received it from the coast of Victoria, from Dr. Curdie. It is very distinct from *P. australis*, Sond., and *P. Novæ-Hollandiæ*, Kütz.

2. **Peyssonnelia australis** (Sond.); "frondibus aggregatis basi adnatis estipitatis coriaceis coccineo-purpureis (demum virescentibus) integris vel obtuse sublobatis obsolete zonatis subtus pallidis radiculis tenuissimis tomentosis versus marginem glabris, verrucis fructiferis sparsis (non zonatim dispositis) purpureis."—*Sond. in Linn.* xxv. *p.* 685; *Harv. Alg. Austr. Exsicc. n.* 328! *Harv. Phyc. Austr. t.* 81.

Hab. Tasmania, *C. Stuart.*

Distrib. Native of the coast of Victoria, *F. Mueller, W. H. H.*

Fronds 4 inches long and 5 inches wide, thick and coriaceous, flabelliform, either undivided or cut into two or three shallow lobes, emitting from the under-surface, toward the base, several scattered, stout roots, and densely clothed over the greater part of the inferior surface with a pale-brown or fulvous tomentum. A broad, glabrous margin extends round the frond beneath the apices of the lobes. The upper surface is smooth, and marked with concentric zones; the margin thin, and frequently revolute. The *colour* is a deep blood-red, darker toward the base. The *substance* of the frond is singularly thick and leathery.

Tribe VII. *GELIDIACEÆ.*

Gen. LXXI. GELIDIUM, *Lamour.*

(J. Ag. Sp. Alg. vol. ii. p. 466. Fl. N. Zeal. ii. p. 243.)

1. **Gelidium corneum** (Lamour; Harv. Phyc. Brit. t. 53; J. Ag. Sp. Alg. ii. p. 469; Kütz. Sp. Alg. p. 764).—Fucus corneus, *Turn. Hist. t.* 257.

Hab. On tidal rocks.

Distrib. Cosmopolitan.

We have not seen any specimens of the ordinary form, but the varieties *cæspitosa* and *crinalis* are common on stones between tide-marks, at Port Arthur, and probably in other suitable localities.

2. **Gelidium asperum** (Grev.; Kütz. Sp. Alg. p. 475; J. Ag. Sp. Alg. ii. p. 475).

HAB. Georgetown, *Gunn.*

DISTRIB. South coast of Australia.

3. **Gelidium glandulæfolium** (Hook. fil. et Harv. in Lond. Journ. vi. p. 406; J. Ag. Sp. Alg. ii. p. 474; Kütz. Sp. Alg. 766; Phyc. Austr. t. 18).

HAB. At Circular Head, *Mrs. Smith.* Georgetown, *W. H. H.*

DISTRIB. South coast of Australia.

Gen. LXXII. NIZYMENIA, *Sond.*

(Sond. in Linn. xxvi. p. 520.)

1. **N. australis** (Sond. l. c.).

HAB. Southport, *C. Stuart.*

DISTRIB. Wilson's Promontory, *Dr. Mueller.* Port Phillip Heads, *W. H. H.*

Root a large, expanded, fleshy disc. *Stems* many from the same base, 4–6 inches high, about $1\frac{1}{2}$ line in breadth, compressed and thickened below, flattening upwards, much branched in an irregularly pinnate, twice or thrice decompound order. *Pinnæ* and *pinnulæ* patent, opposite or scattered, linear, obtuse, much constricted at their insertion as if stalked; the smaller ones resembling leaflets. *Apices* either rounded and very obtuse, or minutely notched. *Margin* quite entire and flat. *Colour* a fine clear red, becoming brighter in fresh-water. *Substance* rigid when dry, tough, coriaceo-corneous. *Structure* very dense; the medullary structure composed of closely-interlaced filaments occupying three-fourths of the breadth; the intermediate cells rather small.—In distributing my Australian *Algæ*, several specimens of this plant were inadvertently sent out under *n.* 385, as "*Areschougia conferta.*" The plant originally so named by me is different, and a true *Areschougia.* The present plant bears a striking external resemblance to it, but is broader, more regularly pinnate, and destitute of costa, and the internal structure quite different. I have not seen the fruit, which is described by Sonder in the memoir above quoted.

Gen. LXXIII. HYPNEA, *Lamour.*

(J. Ag. Sp. Alg. ii. p. 438. Kütz. Sp. Alg. p. 758.)

1. **Hypnea seticulosa** (J. Ag. Sp. Alg. ii. p. 446).—H. charoides, *Sond. Hook. fil. et Harv. Alg. Tasm. Lond. Journ.* vi. *p.* 406.

HAB. Georgetown, *R. Gunn, W. H. H., etc.*

DISTRIB. Coasts of Australia, Japan, China, and the Pacific Islands.

2. **Hypnea episcopalis** (Hook. fil. et Harv. Lond. Journ. vi. p. 406; J. Ag. Sp. Alg. ii. p. 443).

HAB. Georgetown and Port Arthur.

DISTRIB. West and south coasts of Australia.

3. **Hypnea planicaulis** (Harv.); fronde latolineari plana subdistiche ramosissima decomposite pinnata, ramis majoribus applanatis seticulosis crebre bi-tripinnatis, pinnis pinnulisque gracilibus patentibus subulatis acutis nunc apice incrassatis cirrhoso-hamatis, cystocarpiis globosis inflatis ad latera pinnularum sessilibus.—*Harv. Alg. Exsic. n.* 342.

HAB. Georgetown.

DISTRIB. South coast of New Holland.

Fronds densely tufted, 8–12 inches high, and as much in expansion, excessively decompound in a pretty regularly distichous pinnate order. *Main stem* quite flat, one to two lines in breadth, having several lateral similar

branches, which like it are densely bristled with short, spinelike ramuli. The *main branches* are three or four times pinnate; the *pinnæ* 1–2 inches long, compressed, ¼–½ line in diameter, tapering to the apex, and closely set with subulate pinnulæ, which are often again pinnulate. As in all the genus, some of the pinnulæ are lengthened out into cirrhous branches, thickened and hooked at the end. The *colour* is a full-red, becoming bright-scarlet on steeping in fresh-water. The *substance* is soft, and the plant adheres firmly to paper in drying. The *cystocarps* are globose, of large size, and scattered on the pinnules.

This appears to us to be a strongly-marked species, readily distinguished by its flattened stem. It is more abundant at Western Port and on the coast of Victoria than in Tasmania.

Gen. LXXIV. SOLIERIA, *J. Ag.*

(J. Ag. Alg. Medit. p. 156. Endl. 3rd Suppl. p. 53. Kütz. Sp. Alg. p. 748. J. Ag. Sp. Alg. ii. p. 721.)

1. **Solieria australis** (Harv.); fronde dendroidea (1–2-pedali) robusta decomposite ramosissima, ramis alternis sparsisve approximatis pluries alterne compositis, ramulis ultimis linearibus acutis basi attenuatis, cystocarpiis in ramulis semi-immersis.—*Harv. in Trans. R. I. Acad.* xxii. *p.* 552; *Harv. Alg. Exsic. n.* 346.

HAB. Georgetown.

DISTRIB. Western Australia.

Much larger in all its parts and more branching than *S. chordalis*, with less tapering branches, and a firmer and more fleshy substance. The Georgetown specimens are still larger than those from Western Australia.

TRIBE VIII. *CHÆTANGIEÆ.*

Gen. LXXV. CHÆTANGIUM, *Kütz.*

(Kütz. Phyc. Gen. p. 392. Sp. Alg. p. 792. J. Ag. Sp. Alg. ii. p. 458. *Nothogenia*, Mont. An. Sc. Nat. 1843, p. 303.)

1. **Chætangium? (Nothogenia?) flabellatum** (Harv.); fronde cartilagineo-cornea lucida rubra angustissime lineari compressa regulariter dichotoma fastigiata, segmentis patentibus flabellatim expansis pluries furcatis, apicibus obtusis.

HAB. Port Arthur, *W. H. H.* Tasmania, *C. Stuart.*

Root scutate. *Fronds* densely tufted, 2–3 inches high, fastigiate, many times dichotomous, the lower forkings distant, the upper closely approximated; the *ultimate segments* sometimes short, sometimes lengthened out and filiform, always obtuse. The *frond* is strongly compressed, almost flattened, but very narrow, not more than ½ line in breadth. The *colour* is rather a bright purplish-red, and the surface somewhat shining. The *substance* is very similar to that of *Gelidium corneum* or *cartilagineum*. No fruit seen, and the genus therefore doubtful.—The internal structure of the frond is very similar to that of *Chætangium variolosum*, which also agrees with our plant in ramification; but our plant is much narrower, of a brighter colour, and more horny substance.

2. **Chætangium? Lingula** (Harv.); fronde pusilla simplici vel semel furcata plana lanceolata cartilagineo-cornea siccitate rigida basi et apice attenuata obtusa, strato interiore filorum laxiore, peripherico densissimo, cystocarpiis numerosis per frondem sparsis.

HAB. On rocks: Brown's River, *Gunn.*

Fronds tufted, an inch or two high, about two lines broad, flat, lanceolate, either quite simple or once forked, very rigid when dry, tapering to each end, the apex blunt. The interior stratum of the frond is much more lax than in other species of the genus, and the exterior stratum more dense. The structure of the cystocarp is that of *Chætangium.*—Our specimens are covered with fruit, and therefore, we suppose, full-grown.

Gen. LXXVI. ACROTYLUS, *J. Ag.*

(J. Ag. Sp. Alg. vol. ii. p. 192.)

1. **Acrotylus australis** (J. Ag. Sp. Alg. ii. p. 193; Harv. Alg. Exsic. n. 330; Phyc. Austr. t. 99).

HAB. Tasmania, *C. Stuart.*

This plant has got the cystocarpic fruit of a *Chætangium*, to which genus the present is closely allied in habit, but has a somewhat different cellular arrangement. The two genera might be united without much violence.

TRIBE IX. *HELMINTHOCLADIEÆ.*

Gen. LXXVII. SCINAIA, *Bivona.*

(J. Ag. Sp. Alg. ii. p. 420.—*Ginannia*, Mont. Harv. Phyc. Brit. t. 69.)

1. **Scinaia furcellata** (Bivon.; J. Ag. Sp. Alg. ii. p. 422).—Ginannia furcellata, *Mont.*; *Harv. Phyc. Brit. t.* 69; *Lond. Journ.* vi. *p.* 407. Ulva furcellata, *E. Bot. t.* 1881.

HAB. Georgetown, rare, *R. Gunn.* Derwent, *Oldfield.*

DISTRIB. Native of temperate and subtropical seas, north and south.

Gen. LXXVIII. LIAGORA, *Lamour.*

(Lamour. Polyp. Flex. p. 235. Endl. 3rd. Suppl. p. 22. Kütz. Sp. Alg. 537. J. Ag. Sp. Alg. ii. p. 424.)

1. **Liagora viscida** (Ag. Sp. Alg. i. p. 395; J. Ag. Sp. Alg. ii. p. 425).—Fucus viscidus?, *Turn. Hist. t.* 119 (*excl. syn.*).

HAB. Georgetown, common.

DISTRIB. Mediterranean Sea. Also in the tropical oceans, east and west.

Gen. LXXIX. GALAXAURA, *Lamour.*

(Lamour. Polyp. Flex. p. 259. Kütz. Sp. Alg. p. 529.)

1. **Galaxaura obtusata** (Lamour. Pol. Flex. p. 262; Kütz. Sp. Alg. p. 529).

HAB. Tasmania, *Herb. Greville.*

DISTRIB. Tropical and subtropical seas.

TRIBE X. *RHODYMENIACEÆ.*

Gen. LXXX. PLOCAMIUM, *Lamour.*

(Harv. Ner. Austr. p. 121. J. Ag. Sp. Alg. ii. p. 392.—*Thamnophora*, Ag.)

1. **Plocamium coccineum** (Lyngb. Hyd. Dan. 39. t. 9; Harv. Phyc. Brit. t. 44; Fl. Antarct. i. p. 186, and ii. p. 474; Fl. N. Zeal. ii. p. 245; J. Ag. Sp. Alg. ii. p. 395).—Fucus coccineus, *Turn. Hist. t.* 59; *E. Bot. t.* 1242.

Var. *β. flexuosum*, Harv. Ner. Austr. p. 124. t. 43.

HAB. Sea-shores. *β.* In the Tamar, above Georgetown.

DISTRIB. The common form is cosmopolitan.

Our var. *β*, called by Tasmanian collectors "*the lace-pattern*," is a very remarkable and beautiful form of the species, not found anywhere else that we are aware of than at Georgetown. It forms large globose tufts, the fronds lying one on another like the leaves of a book. The branching is pretty regularly dichotomous and fastigiate, the

branches elegantly flexuous throughout, and closely fringed with very slender, pectinate ramuli. No fruit has been seen. The aspect of this variety is very peculiar, but we can detect no character sufficient to distinguish it from *P. coccineum*, the ordinary form of which species is common on the coast.

2. **Plocamium angustum** (J. Ag.; Harv. Ner. Austr. p. 122; Kütz. Sp. Alg. p. 885; J. Ag. Sp. Alg. ii. p. 402).

HAB. Sea-shores, common.

DISTRIB. Australia and New Zealand.

3. **Plocamium costatum** (J. Ag.; Harv. Ner. Austr. p. 122; Kütz. Sp. Alg. p. 886; J. Ag. Sp. Alg. ii. p. 403).

HAB. Mouth of the Tamar.

DISTRIB. Australia and New Zealand.

4. **Plocamium procerum** (J. Ag.; Harv. Ner. Austr. p. 122; Kütz. Sp. Alg. 886; J. Ag. Sp. Alg. ii. p. 400).

HAB. Georgetown and Port Arthur.

DISTRIB. Australia.

Gen. LXXXI. HYMENOCLADIA, *J. Ag.*

(J. Ag. Sp. Alg. ii. p. 772.)

1. **Hymenocladia Usnea** (J. Ag. Sp. Alg. ii. p. 772).—Fucus Usnea, *Br. in Turn. Hist. t.* 225.

HAB. Kent Island, *R. Brown.* Flinders' Island, *Milligan.*

DISTRIB. South shores of Australia.

Gen. LXXXII. RHODOPHYLLIS, *Kütz.*

(Kütz. Sp. Alg. p. 786. J. Ag. Sp. Alg. ii. p. 387.—*Stictophyllum*, Kütz.)

1. **Rhodophyllis Gunnii** (Harv. in Fl. N. Zeal. ii. p. 247).—Cladhymenia? Gunnii, *Harv. Lond. Journ. Bot.* iv. *p.* 540; *Ner. Austr. p.* 87. *t.* 32.—Callophyllis Gunnii, *Kütz. Sp. Alg. p.* 746. Euthora Gunnii, *J. Ag. Sp. Alg.* ii. *p.* 386.

HAB. Abundant at Georgetown.

DISTRIB. New Holland and New Zealand.

2. **Rhodophyllis membranacea** (Harv. in Fl. N. Zeal. ii. p. 247. t. 117).—Halymenia? membranacea, *Harv. Lond. Journ. Bot.* iv. *p.* 448. Rhodymenia membranacea, *Harv. l. c.* vi. *p.* 405. Stictophyllum membranaceum, *Kütz. Sp. Alg. p.* 874. Euthora membranacea, *J. Ag. Sp. Alg.* ii. *p.* 385. Rhodymenia fimbriata, *Hook. fil. et Harv. in Lond. Journ. Bot.* vi. *p.* 405.

HAB. Georgetown, abundant.

DISTRIB. New Holland and New Zealand.

A very variable species, to which we now reduce our *R. fimbriata*, founded on a very broad, delicately fringed form, extremely different in aspect from the ordinary form, as figured in the Flora of New Zealand. Having had the opportunity of collecting this plant abundantly in its various localities, we have succeeded in uniting together many forms, which, if seen in isolated specimens, would pass for so many species. Sometimes the frond is not more than a line wide, and very much divided; sometimes it is nearly an inch in breadth, and but little branched. Some of the wider forms approach *R. Gunnii*, but are to be distinguished by the more ragged habit, and the ciliiferous or foliiferous margin, and acute points of all the lesser segments, etc.

3. **Rhodophyllis multipartita** (Harv.); fronde membranacea lineari decomposite dichotoma vix

fastigiata, axillis rotundatis, ramis patentibus dichotomo-multifidis, minoribus subalterne furcatis, margine integerrimo, apicibus angustatis subacutis, cystocarpiis marginalibus, tetrasporis in segmentis ultimis dispersis.—*Harv. Alg. Exsic. n.* 370.

HAB. Port Arthur, *Lyall, W. H. H.* East coast, *R. Gunn.* Southport, *C. Stuart.*

DISTRIB. Port Fairy, Victoria.

Frond 12 inches or more in length, and as much in the expansion of the branches, membranaceous, 1–2 lines in breadth in most of the branches and lesser divisions, excessively divided in a partly pinnated, partly dichotomous manner. The order of branching is primarily dichotomous, but by frequent suppression of one of the furcations the branches appear pinnated, with dichotomo-multifid lesser branches. All the *axils* are remarkably rounded. The *frond* in most places preserves a uniform breadth, but in some specimens it is twice as broad as in others. The *margin* is always free from lobes or cilia, and quite entire and flat. The *apices* are not remarkably acute. The *colour* is a very full, deep dark-red. *Cystocarps* are borne plentifully on the margin of the smaller laciniæ, and *tetraspores* scattered through the substance of the ultimate divisions. The habit is not unlike that of some narrow specimens of *Gracilaria multipartita.*

Gen. LXXXIII. STENOGRAMME, *Harv.*

(Harv. Beech. Voy. p. 408. Phyc. Brit. t. 157. Kütz. Sp. Alg. p. 873. J. Ag. Sp. Alg. ii. p. 390.)

1. **Stenogramme interrupta** (Mont.; Harv. Phyc. Brit. t. 157; Kütz. Sp. Alg. p. 873; J. Ag. Sp. Alg. ii. p. 391).—S. Californica, *Harv. in Beechey, p.* 409. Delesseria interrupta, *Ag. Syst. p.* 250.

HAB. Georgetown, not common.

DISTRIB. New Zealand, Spain, south of England and Ireland, Keys of Florida, and California.

Gen. LXXXIV. RHODYMENIA, *Grev.*

(Grev. Alg. Brit. p. 84. J. Ag. Sp. Alg. ii. p. 375.)

1. **Rhodymenia corallina** (Grev.; J. Ag. Sp. Alg. ii. p. 379).—Sphærococcus corallinus, *Bory, Voy. Coq. p.* 175. *t.* 16.

HAB. Georgetown, *R. Gunn.*

DISTRIB. New Zealand, and west coast of South America.

2. **Rhodymenia (Acropeltis) phyllophora** (Hook. fil. et Harv. in Lond. Journ. Bot. vi. p. 407).

HAB. Port Arthur, *Jeannerett.* Tasmania, *C. Stuart.*

3. **Rhodymenia polymorpha** (Harv.); stipite brevi mox in basi frondis explanato, fronde dilute rubra latissima oblongo-ovata polymorpha nunc subsimplici margine foliifera, nunc in lacinias plures lanceolatas fissa, laciniis nunc simplicibus nunc margine foliiferis v. varie inciso-partitis, cystocarpiis numerosissimis per totam frondem dispersis.—*Harv. Alg. Exsic. n.* 383.

HAB. Georgetown.

DISTRIB. New Holland.

Frond 1 or 2 feet long, its divisions 2–4 inches wide, membranaceous, very variable in form and division. Sometimes the frond is broadly ovate, and either simple or but once cleft; sometimes it is divided into numerous lanceolate segments, or the principal segments throw off marginal lobes. The *margin* is frequently erose, and the membrane in age pierced with irregular holes. The *colour* varies from a dull purplish-red to a pale brownish-red. *Conceptacles* are very numerous, prominent, and scattered on the whole surface.—It is nearly allied to *R. sanguinea* of New Zealand, and to *R. pertusa* of Western North America. The habit of some specimens is that of an *Iridæa.*

4. **Rhodymenia cuneata** (Harv.); stipite brevi mox in basi frondis desinente, fronde lato-cuneata

subpalmatifida dilute rubra membranacea, margine simplici, cystocarpiis numerosissimis per totam frondem sparsis.

HAB. East coast, *R. Gunn.*

Fronds tufted, on a short filiform stipes, broadly cuneate, 4–6 inches long and 3–4 wide, vertically cleft in a subpalmate manner, the margin flat and without lobes. *Substance* membranaceous, thin. *Colour* a fugacious red, changing to greenish. *Cystocarps* very numerous.—We have seen but few specimens, hardly sufficient to establish the species, and yet we do not know to what other species to refer them. They do not accord with any state of *R. polymorpha*, and yet they approach that species, especially in the fructified specimens. In external habit there is a near resemblance to some forms of *R. palmata*, but the structure and colour are different.

TRIBE XI. *CRYPTONEMIACEÆ.*

Gen. LXXXV. DASYPHLŒA, *Mont.*

(Mont. Prod. Phyc. Ant. p. 8. Voy. Pôl. Sud, p. 100. Kütz. Sp. Alg. 757. J. Ag. Sp. Alg. ii. p. 215.)

1. **Dasyphlœa Tasmanica** (Hook. fil. et Harv. Lond. Journ. Bot. vi. p. 406; J. Ag. Sp. Alg. ii. p. 216; Harv. Phyc. Austr. t. 115).

HAB. Georgetown, rare, *Mrs. Smith.*

DISTRIB. South coast of Australia, *Curdie, W. H. H.*

Gen. LXXXVI. GULSONIA, *Harv.*

(Harv. in Ann. Nat. Hist. xv. p. 334.)

Frons gelatinoso-membranacea, teres, nodoso-annulata, decomposite ramosa, ex tubo centrali amplo articulato monosiphonio filis anastomosantibus longitudinalibus laxe circumdato, et filis horizontalibus excurrentibus dichotomis fastigiatis muco hyalino firmiori inclusis constituta. *Fructus* . . .

1. **Gulsonia annulata** (Harv. l. c. p. 334). (TAB. CXCIII. *A.*)

HAB. Georgetown, rare, *W. H. H.*

DISTRIB. Western Port, Victoria.

Fronds densely tufted, 6–8 inches long, decompoundly much branched; the branches and their divisions and ramuli irregularly scattered, all tapering to the base and apex, and all annularly constricted at short intervals; the nodes swollen and deeply coloured; the internodes pale, like very narrow transverse rings. A cross section shows a very large central tube, surrounded by a narrow stratum of longitudinal filaments, from which radiate toward the circumference dichotomous, callithamnoid, fastigiate filaments, whose branches are separated by pellucid jelly of firm consistence, a layer of which also forms a pellucid envelope of the branch. A longitudinal section shows that the central tube is septate, the septa at intervals of 7 or 8 diameters apart, and that the longitudinal filaments anastomose into a laxly netted, filamentous sheath, enclosing the central tube. The filaments of the periphery are thrown off irregularly from the outer face of the sheath. *Colour* a fine pinky-red, given out in fresh-water. *Substance* very soft.—Until the fruit shall be discovered, the position of this genus must be doubtful. At present I am disposed to think it allied to *Catenella.* It may also be compared with *Gloiopeltis*, *Endocladia*, and *Gattya.*—PLATE CXCIII. *A.* Fig. 1, a frond, *nat. size;* 2, transverse semisection; 3, peripheric filaments; 4, longitudinal section:—the latter figures *magnified.*

Gen. LXXXVII. ARESCHOUGIA, *Harv.*

(Harv. in Trans. R. I. Acad. xxii. p. 554.)

Frons linearis, compressa, immerse costata, disticha ramosissima, e filo centrali articulato et stratis

tribus cellularum constituta; *stratum medullare* e filis articulatis longitudinalibus anastomosantibus laxe intertextis, *intermedium* cellulis rotundis majusculis pluriseriatis, *corticale* cellulis minimis verticalibus formatum. *Cystocarpia* fronde immersa, inter fila strati intermedii suspensa, reticulo filorum velata, carpostomio demum aperta, fila sporifera a placenta centrali emissa continentia; *sporæ* subrotundæ, seriatæ.

1. **Areschougia Laurencia** (Harv. l. c. p. 554).—Thamnocarpus? Laurencia, *Hook. fil. et Harv. Lond. Journ. Bot.* vi. *p.* 409.

HAB. Georgetown, abundant. Southport, *C. Stuart.*

DISTRIB. West and south coasts of Australia.

This plant has the habit of a *Rhabdonia*, but is more firm in texture, and essentially differs in structure by having a central articulated filament or axis, of larger diameter than that of the longitudinal filaments composing the medullary stratum.

2. **Areschougia Stuartii** (Harv.); fronde plano-compressa dense ramosa decomposito-pinnata, pinnis basi et apice angustatis, pinnulis fere lanceolatis utrinque acutis erecto-patentibus cystocarpia immersa gerentibus.

HAB. Southport, *C. Stuart.*

Frond distichously much branched in a subpinnate manner, and repeatedly compound, 3–6 inches long, and as much in the expansion of the branches; the branches and pinnæ close together, erecto-patent, narrow-linear, nearly flat, with an evident immersed costa tapering to the base and apex, the lesser ones with an acute point, and nearly lanceolate in form. The lower part of the stem and larger branches is thickened. *Colour* a bright-red, becoming scarlet in fresh-water. *Cystocarps* minute, immersed in the substance of the lanceolate leaves, one or two in each lamina. The *medullary stratum* of the frond is very lax.—Nearly related to *A. australis*, but narrower, more densely branched, with a much laxer internal structure, the filaments composing the medullary stratum being few, and standing far apart from each other. It has more the habit of *A. conferta*, but its structure is even more different. From all forms of *A. Laurencia* it may be known by its flatness.

Gen. LXXXVIII. RHABDONIA, *Harv.*

(Harv. in Lond. Journ. Bot. vi. p. 408. Kütz. Sp. Alg. 723. J. Ag. Sp. Alg. ii. p. 353.)

1. **Rhabdonia coccinea** (Harv. Lond. Journ. Bot. vi. p. 408; Kütz. Sp. Alg. p. 723; J. Ag. Sp. Alg. ii. p. 354; Harv. Phyc. Austr. t. 54).—Chrysymenia coccinea, *Harv. Lond. Journ. Bot.* iii. *p.* 448.

HAB. Georgetown, *Gunn.*

DISTRIB. Port Phillip.

2. **Rhabdonia nigrescens** (Hook. fil. et Harv. Lond. Journ. Bot. vi. p. 409; J. Ag. Sp. Alg. ii. p. 354).

HAB. Georgetown, *Gunn.*

DISTRIB. South coast of New Holland.

I fear I have led my friend Sonder into error by distributing to him a wrongly marked specimen of one or other of these nearly allied, but, as I still think, distinct species. *C. coccinea* is of a much softer substance, and becomes of a brilliant crimson colour when steeped in fresh-water. *C. nigrescens* is rigid, very imperfectly adheres to paper, and is always of a dull, dark, brownish-red colour, even after exposure to fresh-water. I have collected both species abundantly, and can always distinguish them when growing. *C. coccinea* has a more evident stem, and its branching is somewhat pyramidal: *C. nigrescens* is bushy, branched from the base.

Gen. LXXXIX. ERYTHROCLONIUM, *Sond.*

(Sond. in Linnæa, xxv. p. 691.)

1. **Erythroclonium Muelleri** (Sond. l. c. p. 692).—Rhabdonia? verticillata, *Harv. in Herb. T.C.D.*

HAB. Georgetown, *W. H. H.*

DISTRIB. South coast of New Holland.

The Georgetown specimens are very much larger than those from New Holland, but do not appear specifically different.

Gen. XC. GLOIOSACCION, *Harv.* (nov. gen.)

Frons sacciformis, succo gelatinoso repleta, membranacea, ex stratis fere tribus conflata; *stratum medullare* cellulis maximis gelatinosis cito ruptis, *intermedium* cellulis rotundato-angulatis coloratis, *corticale* cellulis minimis in fila verticalia ordinatis. *Fruct.:* 1, *favellidia* globosa in strato intermedio immersa, nucleolis pluribus demum confluentibus composita; 2, *tetrasporæ* . . . ?

1. **Gloiosaccion Brownii** (Harv. Phyc. Austr. t. 83).—Halosaccion firmum *et* H. hydrophora, *Harv. Alg. Austr. Exsic. n.* 419, 420 (*nec aliorum*). Fucus allantoides, *R. Br. MSS.? in Turn. Hist.* iv. *p.* 105.

Var. *α. membranaceum;* fronde sanguinea, membranacea.—*Harv. Alg. Exsic. n.* 419.

Var. *β. coriacea;* fronde livido-purpurea, coriacea.—*Harv. l. c. n.* 420.

HAB. Var. *α.* Georgetown, *W. H. H.*

DISTRIB. Both vars. at Fremantle, West Australia. Var. *α.* Port Phillip.

I formerly mistook this plant for *Halosaccion*, a genus founded on *Fucus saccatus*, Turn., to which externally it bears the closest resemblance. The substance, structure, and contents are however very different. I now suppose it may be the plant alluded to by Turner, in his remarks under *F. saccatus*, as having been brought from Australia by Mr. Brown, and characterized by being filled with pellucid jelly.

Gen. XCI. GYMNOGONGRUS, *Mart.*

(Mart. Bras. p. 27. J. Ag. Sp. Alg. ii. p. 313.—*Tylocarpus, Oncotylus, etc.*, Kütz.)

1. **Gymnogongrus fastigiatus** (Harv.); fronde pusilla filiformi vel parum compressa dichotome ramosissima fastigiata flabelliformi, ramis ramulisque densis apice attenuatis subacutis, axillis obtusis, cystocarpiis infra apices ramulorum nodoso-incrassatis immersis circumcirca prominentibus.

HAB. Granite rocks at half-tide: Forester's River, *Gunn.*

Fronds forming dense pulvinate tufts, from 1–1½ inch high, about as thick as hog's-bristle, filiform or subcompressed, rising with a simple stipes for half an inch, then forked, and afterwards many times dichotomous, the upper divisions being close together. All the branches are suberect, but the axils are rounded, though narrow. The ultimate ramuli taper slightly to the point, and are all of one height. *Cystocarps* either solitary or two or three in succession, immersed in the terminal ramuli.—In habit and size this species resembles *G. densus* and *G. pygmæus.*

2. **Gymnogongrus furcellatus** (?) (Ag.; J. Ag. Sp. Alg. ii. p. 318).—Sphærococcus furcellatus, *Kütz. Sp. Alg. p.* 737.

HAB. Southport, *C. Stuart.*

DISTRIB. New Zealand. Pacific coasts of South America.

The specimens are not very satisfactory. They are more slender than the ordinary form, and less compressed, but scarcely specifically different.

Gen. XCII. MYCHODEA, *Harv.*

(Harv. Lond. Journ. vi. p. 407. Kütz. Sp. Alg. p. 723.—*Cystoclonii* sp., J. Ag. Sp. Alg. ii. p. 306.)

1. **Mychodea carnosa** (Hook. fil. et Harv. Lond. Journ. vi. p. 408; Kütz. Sp. Alg. p. 723).—Cystoclonium carnosum, *J. Ag.* ii. *p.* 309.

HAB. Georgetown.

DISTRIB. South coast of New Holland.

2. **Mychodea membranacea** (Hook. fil. et Harv. Lond. Journ. vi. p. 408; Kütz. Sp. Alg. p. 723).—Cystoclonium membranaceum, *J. Ag.* ii. *p.* 309.

HAB. Georgetown.

DISTRIB. South coast of New Holland.

3. **Mychodea terminalis** (Harv.); fronde tereti carnoso-membranacea decomposite ramosissima, ramis patentibus alternis sparsisve multifidis v. subdichotome divisis flexuosis, axillis rotundatis, ramulis subulatis simplicibus v. divisis, cystocarpiis ramulos (fere omnes) terminantibus. — *Harv. Alg. Exsic. n.* 413.

HAB. Above Georgetown, in the Tamar, *Gunn, W. H. H.*

I formerly confounded this species with *M. membranacea*, and have perhaps distributed it sometimes under that name. Except when in fruit, it is not always easy to distinguish between them without close examination. The position of the cystocarps affords however a satisfactory character, as in *M. membranacea* they are sessile along the sides of the larger and smaller branches. It is a more slender and diffusely branched plant, with less of a primary stem than *M. membranacea.*

4. **Mychodea disticha** (Harv.); fronde lato-lineari ancipiti carnoso-cartilaginea disticha ramosa, nunc subdichotoma, nunc caule subindiviso ramis lateralibus alternis v. oppositis, ramis simplicibus v. iterum compositis ligulatis basi constrictis obtusis, ramulis minutis creberrimis marginalibus nunc longioribus ligulatis, cystocarpiis in ramulis immersis.—*Harv. Alg. Exsic. Aust. n.* 416. (TAB. CXCII. *A.*)

HAB. East coast, *Gunn.*

Frond 10–12 inches high, about a line in breadth, strongly compressed and two-edged, distichously branched, the main stem either twice or thrice forked, or nearly simple, and set with numerous long, strap-shaped, simple or slightly divided branches, which are patent or suberect, constricted at their insertion, and slightly narrowed to the point. The *branches* and their minor divisions are closely fringed with short compressed ramuli, 2–4 lines long, occasionally intermixed with others of greater length. *Cystocarps* are imbedded in the tips of the ramuli. *Colour*, when dry, very dark. *Substance* rigid, very imperfectly adhering to paper.—In habit this plant more resembles *Prionitis*, but the structure of both frond and cystocarp is that of *Mychodea.*—PLATE CXCII. *A.* Fig. 1, a frond, *nat. size;* 2, ramulus, with cystocarp; 3, section of cystocarp; 4, section of frond:—the latter figures *magnified.*

5. **Mychodea hamata** (Harv.); fronde carnoso-membranacea compressa siccitate rugulosa cæspitosa a basi ramosissima, ramis dichotome multifidis basi et apice attenuatis nunc nudis nunc ramulis lateralibus plus minus onustis, axillis omnibus rotundatis, ramulis lateralibus patentibus v. divaricatis sæpissime reflexo-hamatis acutis, cystocarpiis ad latera ramorum sessilibus cornutis.—*Harv. Alg. Exsic. Austr. n.* 415.

HAB. Georgetown and Port Arthur.

DISTRIB. South coast of New Holland.

This forms large, loosely interwoven, globose tufts, on stones and *Algæ*, near low-water mark, at the mouth of the Tamar. The tufts spring from matted, branching root-fronds. The erect fronds are 6–8 inches long, angularly compressed, about a line in diameter, rather succulent when recent, shrinking in drying, and becoming furrowed;

they taper to the base and apex, and are pretty regularly dichotomous, with more or less intermixture of lateral branches. The axils are all rounded, the apices attenuated and acute. Sometimes there are few or no lateral ramuli; in other specimens they are numerous, and frequently strongly hooked backwards, or converted into clasping tendrils. The *cystocarps* are sessile on the branches, and mostly tipped with a strong subulate horn. The *colour* is a dark brown-red. The *substance* is firm, and the plant imperfectly adheres to paper in drying.

Gen. XCIII. POLYCŒLIA, *J. Ag.*

(J. Ag. Sp. Alg. ii. p. 305.)

1. **Polycœlia fastigiata** (Harv.); fronde gelatinoso-membranacea tenui subflabelliformi dichotome fissa v. multipartita, laciniis cuneatis apice attenuatis fastigiatis, cystocarpiis per totam frondem sparsis.—Callophyllis fastigiata, *Harv. Alg. Exsic. n.* 407. (Tab. CXCII. *B.*)

Hab. At the mouth of the Tamar, *W. H. H.*

Fronds 6–8 inches long, and as much in the expansion of the laciniæ, foliaceous, deeply divided in a dichotomous manner, sometimes rather irregularly multifid, the segments cuneate, from half an inch to an inch in breadth, the terminal laciniæ gradually narrower, the apices subacute and fastigiate. *Colour* a rather pale rose-red, occasionally deeper. *Substance* very soft, somewhat gelatinous on the surface. The plant closely adheres to paper. The *cystocarps*, which are densely scattered over the frond, resemble those of a *Callophyllis* in structure.—The structure of the frond agrees with Agardh's description of that of his *Polycœlia laciniata*, a plant from Western Australia, unknown to me, but which perhaps may be specifically as well as generically identical with what is now described. Not having seen a specimen of the West Australian plant, I think it best, for the present, to give a name to the Tasmanian. I recently distributed it as a *Callophyllis*, having placed it, without examination, in that genus from its strong external resemblance to *C. discigera*.—Plate CXCII. *B.* Fig. 1, a frond, *nat. size;* 2, section through frond and imbedded cystocarp; 3, a tetraspore:—the latter figures *magnified.*

Gen. XCIV. CALLOPHYLLIS, *Kütz.*

(Kütz. Phyc. Gen. p. 400. Sp. Alg. p. 744. J. Ag. Sp. Alg. ii. p. 296.—*Rhodymeniæ* sp., Auct.)

1. **Callophyllis Lamberti** (Hook. fil. et Harv. Lond. Journ. Bot. vi. p. 405; J. Ag. Sp. Alg. ii. p. 300).—Chondrococcus Lamberti, *Kütz. Sp. Alg. p.* 752 (*in part*). Rhodocladia Lamberti, *Sond.* Fucus Lamberti, *Turn. Hist. t.* 237.

Hab. Georgetown.

Distrib. South coast of New Holland.

2. **Callophyllis coccinea** (Harv. in Lond. Journ. vi. p. 405; Kütz. Sp. Alg. p. 746; J. Ag. Sp. Alg. ii. p. 301).—Sphærococcus australis, *Harv. Lond. Journ.* iii. *p.* 445.

Hab. Georgetown, abundant.

Distrib. Common on the south coast of New Holland.

Gen. XCV. KALLYMENIA, *J. Ag.*

(J. Ag. Alg. Medit. p. 98. Harv. Phyc. Brit. t. 13. J. Ag. Sp. Alg. ii. p. 284.)

1. **Kallymenia cribrosa** (Harv.); stipite brevi in frondem maximam simplicem v. bipartitam rotundato-reniformem ampliato, lamina basi cordata gelatinoso-membranacea foraminibus circularibus crebris pertusa, cystocarpiis sparsis.—*Harv. in Trans. R. I. Acad.* xxii. *p.* 555; *Phyc. Austr. t.* 73.

Hab. East coast, very rare, *Gunn.* Georgetown, *Fereday.*

Distrib. Western Australia. Port Phillip Heads.

A beautiful species, elegantly perforated like an *Agarum*. I first found it in Western Australia, and afterwards collected it in greater plenty at Port Phillip Heads. It appears to be of very rare occurrence in Tasmania. (Local name, "The Holy Coat.")

2. **Kallymenia Tasmanica** (Harv. MSS.).

Hab. Georgetown, *W. H. H.*

Fragments of a *Kallymenia* of large size, resembling *K. Harveyana*, are not uncommon at Georgetown, but I have as yet seen no specimen sufficiently perfect to enable me to characterize the species. One of my specimens is 18 inches broad, about 12 inches long, broadly foliaceous, lobed and lacerate at the margin; another, of somewhat smaller size, is deeply laciniate, and divided into numerous narrow lobes and segments. There seems to be no very definite outline. There is a short stipes, soon widening into the cuneate base of the frond. The *colour* is a deep crimson. The *substance* is soft, and the plant adheres firmly to paper.

Gen. XCVI. GIGARTINA, *Lamour.*

(J. Ag. Sp. Alg. ii. p. 260. Harv. Ner. Bor. Amer. ii. p. 174.)

1. **Gigartina livida** (Grev.; Hook. et Harv. Lond. Journ. vi. p. 407; J. Ag. Sp. Alg. ii. p. 270.) —Fucus lividus, *Turn. Hist. t.* 254.

Hab. Sandy Cove, *Dr. Lyall* and *Dr. Hooker.*

2. **Gigartina pinnata** (J. Ag. Sp. Alg. ii. p. 270; Harv. Phyc. Austr. t. 68).

Hab. Georgetown, *W. H. H.*

Distrib. Port Phillip Heads.

A very fine species, sometimes 18 inches long, three or four times pinnate.

3. **Gigartina flabellata** (J. Ag. Sp. Alg. ii. p. 265).

Hab. Georgetown.

Distrib. South coast of Australia.

4. **Gigartina chondroides** (Hook. fil. et Harv.); livida, fronde stipitata apice flabellatim ramosa disticha cartilaginea, ramis plano-compressis linearibus basi cuneatis pluries dichotomis patentibus fastigiatis, axillis latissime rotundatis, apicibus obtusis.—*Hook. fil. et Harv. in Lond. Journ.* vi. *p.* 407.

Hab. Sandy Bay, *Dr. Lyall.*

I have no specimen of this plant, which was described some years ago from a specimen in Herb. Hooker, which I have not recently seen. It may possibly be referable to *G. flabellata.*

5. **Gigartina ancistroclada** (Mont. Pôl. Sud, p. 121. t. 7. f. 4; Kütz. Sp. Alg. p. 751; J. Ag. Sp. Alg. ii. p. 272).

Hab. Brown's River, *Gunn.*

Distrib. New Zealand.

6. **Gigartina brachiata** (Harv.); fronde ancipiti lineari decomposite ramosissima, ramis distichis patentibus v. divaricatis flexuosis pluries laxe v. densius pinnatis, pinnis simplicibus v. iterum pinnatis patentissimis, ramulis subulatis horizontalibus, cystocarpiis sessilibus.—*Harv. Alg. Austr. Exsic.* 397.

Hab. On stones, near low-water mark, opposite Georgetown, *W. H. H.*

Fronds 3–4 inches high, scarcely a line in diameter, strongly compressed, two-edged, excessively branched in a repeatedly, but very irregularly, pinnate manner; all the branches and their divisions distichous, and very patent or divaricate. In young specimens the *ramuli* are strictly subulate, but in older examples they are frequently fili-

form. The *substance* is firmly cartilaginous, and the plant very imperfectly adheres to paper. *Colour* a livid brownish-purple.—The imperfect specimens referred to *G. acicularis* in Hook. Lond. Journ. vi. p. 407, probably belong to this species, which is most nearly related to *G. Teedii.*

7. **Gigartina? lanceolata** (Harv.); fronde e stipite brevi vix canaliculato oriente plana carnosa lanceolata v. obovata simplici v. in frondes plures consimiles partita, margine nuda v. sæpius plus minus pinnato-ciliata, ciliis subulatis horizontalibus.

HAB. Georgetown, *Gunn.*

The specimens are not mature, and without fruit. It is possible, therefore, either that our plant may be an *Iridæa*, or some form of the protean *G. radula*. The *fronds* are about 6 inches long, an inch or inch and half in width, tapering much to the base, and either obtuse or acute at the apex. The margin in many is copiously furnished with horizontal fringing processes 2 or 3 lines long, and about $\frac{1}{3}$ line in breadth: other specimens are quite bare. We have seen one or two instances of cilia rising from the disc, showing affinity with *G. radula*. The structure of the frond is that of *Gigartina*.

Gen. XCVII. IRIDÆA, *Bory.*

(Bory, Coq. p. 103 (excl. sp.). J. Ag. Sp. Alg. ii. p. 250. Harv. Ner. Bor. Amer. ii. p. 178.)

1. **Iridæa micans?** (Bory, Coq. p. 110. t. 13 et 13 bis. J. Ag. Sp. Alg. ii. p. 254).

HAB. Sandy Cove, *Dr. Lyall.*

DISTRIB. Falkland Islands. Chili. Cape Horn. New Zealand.

Imperfect scraps, possibly referable to this species.

2. **Iridæa foliifera** (Harv.); fronde fusco-rubra membranacea ovata v. ovato-lanceolata basi cuneata et in stipitem attenuata a margine foliifera, foliolis lanceolatis subpetiolatis, soris tetrasporarum punctiformibus per totam frondem sparsis.

HAB. Georgetown, *Gunn.*

I am exceedingly unwilling to propose a new species in this troublesome genus, particularly on imperfect specimens, yet I can hardly overlook the present plant altogether, and I know not any species of *Iridæa* with which it can be associated. In habit it so much resembles some specimens of *Rhodymenia polymorpha* that, without testing it microscopically, it might easily be passed over for that species. The colour is a rather full red, somewhat brownish or purplish; the surface, when dry, slightly lustrous. The outline of the frond, as in all the genus, is very variable, its most striking peculiarity being the marginal leafy lobes. *Sori* very numerous, immersed in the substance.—We possess fragmentary specimens of other Tasmanian *Iridææ*, too imperfect for description.

3. **Iridæa polycarpa** (Harv.); fronde intense rubra longissima lanceolata v. ovato-lanceolata simplici integerrima, margine incrassato, basi cuneata et in stipitem filiformem tenuem vix canaliculatum attenuata, cystocarpiis numerosissimis per totam frondem sparsis.

HAB. Tasmania, *C. Stuart.*

Perhaps this may be the cystocarpic state of the preceding, but our numerous specimens are all quite simple, without lateral foliations. The *colour* is a deep blood-red. The *substance* is thin, much thinner than in *I. laminarioides*, to which the frond approaches in form. The *cystocarps* are of large size, and very densely scattered over the surface; they are nearly spherical, and prominent on both surfaces of the frond. The *frond* is from 1–3 feet in length, and from 1½–6 inches in width.

Gen. XCVIII. EPYMENIA, *Kütz.*

(Kütz. Sp. Alg. p. 787. J. Ag. Sp. Alg. ii. p. 219.)

1. **Epymenia membranacea** (Harv.); fronde stipitata flabellatim expansa repetite dichotoma

membranacea, segmentis inferne semicostatis cuneatis, superioribus linearibus apice obtusis v. subacutis, cystocarpiis in sporophyllis subbinis.—*Harv. Phyc. Austr. t.* 89.

HAB. Georgetown, *W. H. H.* Southport, *C. Stuart.*

A smaller and much thinner and more membranous plant than *E. obtusa*, which in all other respects it nearly resembles. The apices are perhaps less obtuse. There are commonly two cystocarps on each fertile leaflet in the only fruiting specimen seen.

Gen. XCIX. CHRYSYMENIA, *J. Ag.*

(J. Ag. Alg. Medit. p. 105. Sp. Alg. ii. p. 209. Harv. Ner. Bor. Amer. ii. p. 187.)

1. **Chrysymenia obovata** (Sond. Alg. Preiss. p. 29; Harv. Ner. Austr. p. 77; Harv. Phyc. Austr. t. 10).—Rhabdonia? globifera, *J. Ag. Sp. Alg.* ii. *p.* 355??

HAB. Stones at low-water mark, above Georgetown.

DISTRIB. West and south coasts of Australia.

I am at a loss to discover why Professor Agardh should have placed this plant in *Rhabdonia*, supposing that we are speaking of the same species. To me it seems nearly allied, not merely in habit but in structure, to *Ch. uvaria*.

Gen. C. CHYLOCLADIA, *Grev., J. Ag.*

(J. Ag. Sp. Alg. ii. p. 360. Harv. Ner. Bor. Amer. ii. p. 185.)

1. **Chylocladia clavellosa** (Grev.; Harv. Man. p. 71; Phyc. Brit. t. 114; J. Ag. Sp. Alg. ii. p. 366).—Fucus clavellosus, *Turn. Hist. t.* 30; *E. Bot. t.* 1203.

HAB. Georgetown, rare, *Gunn, W. Archer.* Sullivan's Cove, *Dr. Lyall.*

DISTRIB. Coasts of Europe from Norway to Spain. Falkland Islands.

Gen. CI. HALYMENIA, *Ag.*

(J. Ag. Sp. Alg. ii. p. 197. Harv. Ner. Bor. Amer. ii. p. 192.)

1. **Halymenia? saccata** (Harv.); fronde rosea tereti (?) saccata succo repleta pinnatim v. bipinnatim composita, pinnis pinnulisque suboppositis simplicibus saccatis basi constrictis apice obtusis, tetrasporis sparsis, cystocarpiis in ramis immersis infra stratum periphericum suspensis.

HAB. At Georgetown, *Archer.*

Frond a foot long, and as much in the expansion of the branches, bipinnate, some of the pinnulæ furnished with a third series of pinnules. The *main branches* are nearly half an inch or sometimes more in diameter, the pinnulæ 2–3 lines; both are simple, saccate, much constricted at their insertion, and tapering upwards to a blunt point. *Cystocarps* suspended in a network under the exterior layer, which is composed of moniliform filaments, formed of minute coloured cells. *Colour* rosy-red. *Substance* delicately membranaceous. It most closely adheres to paper in drying, and appears to have been filled, when fresh, with abundance of loose gelatine.

This bears so close a resemblance to *Chrysymenia Enteromorpha*, Harv. Ner. Bor. Amer. ii. p. 187, and also to the *Bindera splachnoides* of Western Australia, that, without microscopic examination of the structure of the frond, or by the fruit, these three plants cannot well be distinguished!

Gen. CII. NEMASTOMA, *J. Ag.*

(J. Ag. Alg. Medit. p. 89. Sp. Alg. ii. p. 162. *Gymnophlœa*, Kütz.

1. **Nemastoma Feredayæ** (Harv.); stipite tereti ramosa (v. simplici), ramis in basi cuneata frondis cito deliquescentibus, fronde flabelliformi compresso-plana rosea repetite dichotoma, segmentis sensim

angustatis, terminalibus attenuatis filiformibus acutis, margine nunc simplici nunc processibus proliferis subpinnatis onusto.—*Harv. Alg. Exsic. n.* 430.

Var. *β. prolifera;* segmentis majoribus e margine frondes pinnatas emittentibus. (TAB. CXCV. *A.*)

HAB. Georgetown, *Mrs. Fereday, W. H. H., etc.*

Stipes an inch or more long, terete, subsolid, twice or thrice forked; each branch passing into the cuneate base of a flattened or compressed, much divided, dichotomous, flabelliform frond. The lower segments are about $\frac{1}{4}$ inch wide, the upper about a line, and the terminal ones not a quarter of a line in breadth. Sometimes the branching is perfectly regular and dichotomous. In other specimens the lower, and sometimes the upper segments, throw out from their margin very numerous secondary fronds, which are more or less regularly dichotomous. Thus the general frond becomes densely and intricately branched. The *colour* is a deep rosy-red. The *substance* soft and lubricous, and the plant closely adheres to paper in drying. It belongs to the section of the genus called *Gymnophlœd*, and may range next to *N. dichotoma.*—PLATE CXCV. *A.* Fig. 1, a frond, the *nat. size;* 2, section, *magnified.*

2. **Nemastoma? densa** (Harv.); fronde fuscescente teretiuscula dichotome v. vage ramosa, ramis primariis crassis parum divisis, secundariis filiformibus gracilibus quaquaversis creberrimis dichotome multifidis ramos primarios omnino vestientibus, divisuris omnibus divaricato-patentibus axillisque rotundatis, ramulis ultimis setaceis obtusis.—*Harv. Alg. Exsic. n.* 431.

HAB. Georgetown, on the mudflats, *Gunn, W. H. H.*

Fronds 6–8 inches long, excessively dense and bushy. The *main frond* is upwards of a line in diameter, and sparingly branched in a dichotomous or irregular manner; its divisions very patent, and somewhat flexuous. This frond throws out, throughout its whole length, and directed to every side, a vast number of slender, many times dichotomous, filiform, divaricating branches, so that the general frond becomes excessively bushy. The lesser branches are greatly more slender than their primaries, and their terminal laciniæ are not thicker than hog's-bristle. Every axil is very wide, and every ramulus squarroso-patent. The *colour* is a dull reddish-brown. The *substance* soft and gelatinous. The filaments of the periphery are nearly free, and their cells cylindrical.—I am by no means assured of the genus to which this plant properly belongs; and perhaps it would be better placed in *Nemaleon*, or in the neighbourhood of that genus.

Gen. CIII. HOREA, *Harv.*

(Harv. in Trans. R. I. Acad. vol. xxii.)

Frons carnoso-membranacea, plano-compressa v. subteres, e stratis tribus cellularum composita; *stratum medullare* e cellulis maximis inanibus demum sæpe ruptis; *intermedium* cellulis pluriseriatis minoribus coloratis; *corticale* filis moniliformibus verticalibus dichotomis muco cohibitis formatum. *Favellæ* intra pericarpium proprium apice spinis coronatum poro pertusum ad placentam basalem affixæ, filis arachnoideis laxe circumdatæ, sporas conglobatas angulares foventes. *Tetrasporæ* sparsæ, cruciatim divisæ.

1. **Horea speciosa** (Harv.); fronde lato-lineari applanata decomposite pinnata, ramis elongatis ambitu lanceolatis sub-bipinnatis, pinnis pinnulisque oppositis patentibus, pinnulis linearibus obtusis nunc apice cirrhoso-hamatis, cystocarpiis sæpius marginalibus (paucis) apice spinoso-coronatis.—*Harv. Alg. Exsic. n.* 439.—(TAB. CXCIV. *A.*)

HAB. Mouth of the Tamar, rare, *W. H. H.*

DISTRIB. Also found at Western Port, Victoria, *W. H. H.*

Frond 12–16 inches long, and as much in the expansion of the branches; three or four times pinnate, every division being distichous. The *principal branches* are nearly half an inch in width, and so strongly compressed as

to be called flat; the *lesser branches* are about a quarter of an inch wide, and the ramuli about a line. The *ramification* is pretty regularly pinnate, the pinnæ and pinnules being close together and nearly opposite, all patent, but gently curving upwards. The *colour* is a pale red. The *substance* soft and gelatinous, soon decomposing in fresh-water. The *cystocarps* are few, scattered along the edges of the branches and ramuli.—PLATE CXCIV. *A.* Fig. 1, a branch, the *nat. size;* 2, section of the frond; 3, a cystocarp:—the latter figures *magnified.*

2. **Horea polycarpa** (Harv.); fronde applanata basi cuneata decomposite dichotoma et vage laciniata, laciniis cuneato-linearibus repetite furcatis sensim attenuatis plus minus papillosis apice subacutis, cystocarpiis stellato-echinatis numerosissimis per totam frondem densissime sparsis.—*Harv. Alg. Austr. Exsic. n.* 438.—(TAB. CXCIV. *B.*)

HAB. East coast, *Gunn.*

DISTRIB. Shores of Victoria, *W. H. H.*

Frond sessile, foliaceous, 6–8 inches long, cuneate at base, divided in an irregularly dichotomous manner into innumerable segments, which are from a quarter of an inch to nearly an inch broad, linear-cuneate, repeatedly forked or irregularly laciniate, all the minor divisions suberect, the axils narrow, and rather acute. In specimens that bear tetraspores, every part of the frond is generally densely papillate, with linear processes half a line to a line or more in length. In those that bear cystocarps, these generally take the place of the papillæ, the whole disc and margin being thickly studded with them. The *cystocarps* are crowned by four or five longish spines. The *tetraspores* are abundantly scattered through all parts of the cortical layer in such specimens as produce them. The *colour* is a pale rosy-red, soon fading into greenish. The substance very soft and lubricous, soon decomposing in fresh-water. In drying, the plant adheres firmly to paper.—PLATE CXCIV. *B.* Fig. 1, a plant with cystocarps; 2, a plant with tetraspores, both of the *nat. size;* 3, fragment with four cystocarps; 4, section of a cystocarp; 5, tetraspores:—the latter figures *magnified.*

TRIBE XII. *SPYRIDIACEÆ.*

Gen. CIV. SPYRIDIA, *Harv.*

(Harv. in Hook. Br. Fl. ii. p. 336. Phyc. Brit. t. 46. J. Ag. Sp. Alg. ii. 338. Kütz. Sp. Alg. 665.)

1. **Spyridia filamentosa** (Harv. Phyc. Brit. t. 46; J. Ag. Sp. Alg. ii. p. 340).—Ceramium filamentosum, *Ag.* Conferva Griffithsiana, *E. Bot. t.* 2312.

HAB. Georgetown, common.

DISTRIB. Native of the warmer temperate parts of the Atlantic and Pacific Oceans, and in tropical seas, reaching its most northern limit on the south coast of England.

The plant noticed in Hook. Lond. Journ. vol. iii. p. 449, as var. β *verticillata*, and on which Kützing has founded his *S. Tasmanica*, belongs to *Wrangelia*, and will be found described above, under the name *W. setigera*. *Spyridia? pellucida*, Lond. Journ. l. c., is *Callithamnion mucronatum*, J. Ag.

TRIBE XIII. *CERAMIACEÆ.*

Gen. CV. CENTROCERAS, *Kütz.*

(Kütz. Linnæa, 1841, p. 741. Sp. Alg. p. 688. J. Ag. Sp. Alg. ii. 147.)

1. **Centroceras clavulatum** (Mont. Fl. Alg. p. 140; J. Ag. Sp. Alg. ii. p. 148; Harv. Ner. Bor. Amer. part ii. p. 211. t. 33. f. C).—Ceramium clavulatum, *Ag.*

We have not seen Van Diemen's Land specimens, but as this plant is very common on the opposite shores of

Bass's Straits, and along the whole coasts of Australia, it probably occurs on the rocky shores of Tasmania. Native of tropical and subtropical seas.

Gen. CVI. CERAMIUM, *Roth.*

(J. Ag. Sp. Alg. ii. p. 113. Harv. Phyc. Brit. t. 181, etc.)

1. **Ceramium rubrum** (Ag.; J. Ag. Sp. Alg. ii. p. 127; Kütz. Sp. Alg. p. 685; Harv. Phyc. Brit. t. 181).—Conferva rubra, *E. Bot. t.* 1166.

HAB. On the larger and smaller *Algæ*, common.

DISTRIB. Cosmopolitan.

2. **Ceramium diaphanum** (Roth; J. Ag. Sp. Alg. ii. p. 125; Harv. Phyc. Brit. t. 193).—Conf. diaphana, *Dillw. Conf. t.* 38; *E. Bot. t.* 1742.

HAB. Georgetown, *Gunn.*

DISTRIB. Cosmopolitan.

3. **Ceramium ramulosum** (Hook. fil. et Harv. Lond. Journ. vi. p. 410; J. Ag. Sp. Alg. ii. p. 121).

HAB. Georgetown, *Gunn.*

The Tasmanian specimens formerly referred to *C. nodosum* and *C. Deslongchampsii*, seem rather to belong to the present species, which is nearly related to the former.

4. **Ceramium gracillimum** (Kütz.; Harv. Phyc. Brit. t. 206; J. Ag. Sp. Alg. ii. p. 118).

HAB. Georgetown, on *Zostera*, etc., *W. H. H.*

DISTRIB. Europe. North America.

5. **Ceramium puberulum** (Sond.).—Cer. monile, *Hook. fil. et Harv. Lond. Journ.* vi. *p.* 410; *J. Ag. Sp. Alg.* ii. *p.* 132. Celeceras monile, *Kütz. Sp. Alg. p.* 684.

HAB. Georgetown, common.

DISTRIB. Western Australia.

Gen. CVII. HALOPLEGMA, *Mont.*

(Mont. An. Sc. Nat. 1842. Endl. 3rd Suppl. p. 36. J. Ag. Sp. Alg. ii. p. 110.)

1. **Haloplegma Preissii** (Sond. Alg. Preiss. p. 24; Kütz. Sp. Alg. 672; J. Ag. Sp. Alg. ii. p. 111).—Rhodoplexia Preissii, *Harv. in Hook. Ic. Pl. t.* 613.

Var. *β. flabelliforme;* fronde tenuiori latiori parum lobata flabelliformi.

HAB. Mouth of the Tamar, not uncommon. Flinders' Island, *Dr. Milligan.* Var. *β.* In the Tamar, above Georgetown, on rocky shores at low-water.

DISTRIB. West and south coasts of Australia.

Our var. *β*, which is common on shores, under Mr. Lawrence's place, a short distance above Georgetown, differs from the usual state of the species in being much thinner and more translucent, the lobes fewer and much broader, and in the colour, which is more purple. The microscopic characters of the two plants are, however, identical, and various intermediate states occur towards the mouth of the River Tamar.

Gen. CVIII. CROUANIA, *J. Ag.*

(J. Ag. Alg. Medit. p. 83. Endl. 3rd Suppl. p. 36. Harv. Phyc. Brit. t. 106. J. Ag. Sp. Alg. ii. p. 104.)

1. **Crouania attenuata,** var. *australis* (Harv. Alg. Austr. Exsic. n. 485; J. Ag. Sp. Alg. ii. p. 105; Harv. Phyc. Brit. t. 106).

HAB. At Table Cape, *Miss Mackenzie.*

Distrib. Native of Mediterranean, and coasts of France and England. Western Australia, at King George's Sound.

The specimens are rather coarser and less gelatinous than those from the south coast of England, but closely resemble some that we have received from the Mediterranean.

2. **Crouania insignis** (Harv.); fronde robusta elata (pedali et ultra) cartilaginea decomposite ramosissima, ramis alternis repetite alterne divisis creberrime nodulosis, ramulis cylindraceis vestitis acutis vix attenuatis.—*Harv. Alg. Exsic. Austr. n.* 488.—(Tab. CXCIII. *B.*)

Hab. Georgetown, *W. H. H.* Brown's River, *Gunn.*

Distrib. South coast of New Holland.

Frond 12 or 14 inches long, more than half a line in diameter, tapering toward the apex, excessively branched. *Branches* alternate, 8–10 inches long, erecto-patent, two or three times similarly compounded, the ultimate ramuli less than an inch in length. All the older parts of the frond are closely nodulose, the whorls of peripheric filaments being partially separated, though not so much so as to uncover the axial filament. The smaller branches and ramuli are uniformly clothed with filaments, and therefore cylindrical. The peripheric filaments are not gelatinous, thick, very much branched, the branching dichotomous and divaricate; their apices are blunt. *Tetraspores* triangularly divided, solitary on the ramuli. *Favellæ* hidden among the ramellæ of abortive branchlets, formed out of a whole or a half ramellus, reniform, containing very numerous spores. *Colour* a deep brownish-red. *Substance* soft, but firm. It closely adheres to paper in drying.—Plate CXCIII. *B.* Fig. 1, a branch, the *natural size;* 2, apex of a ramulus; 3, ramellus with a favella; 4, spores; 5, ramellus with tetraspores; 6, a tetraspore:—the latter figures *magnified.*

Gen. CIX. PTILOTA, *Ag.*

(Ag. Sp. Alg. i. p. 384. Endl. 3rd Suppl. p. 36. J. Ag. Sp. Alg. ii. p. 92.)

1. **Ptilota articulata** (J. Ag. Sp. Alg. ii. p. 100; Hook. fil. et Harv. Lond. Journ. iii. p. 409).

Hab. Georgetown, very common.

Distrib. South coast of Australia.

2. **Ptilota Jeannerettii** (Harv. Alg. Exsic. n. 479).—Thamnocarpus Ptilota, *Hook. fil. et Harv. Lond. Journ.* vi. *p.* 409.

Hab. Port Arthur, *Dr. Jeannerett.* Eagle Hawkneck, *J. D. H.* Southport, *C. Stuart.*

Distrib. South coast of New Holland, *D. Curdie, W. H. H.*

3. **Ptilota Rhodocallis** (Harv. Alg. Austr. Exsic. n. 478; Phyc. Austr. t. 44).—Rhodocallis elegans, *Kütz. Sp. Alg. p.* 670.

Hab. Southport, *C. Stuart.*

Distrib. Coast of Victoria, at Port Fairy.

A beautiful species, of a brilliant deep-red colour, which becomes a flaming scarlet in fresh-water. The general habit resembles that of *Phacelocarpus Labillardieri.*

Gen. CX. THAMNOCARPUS, *Harv.*

1. **Thamnocarpus Gunnianus** (Harv. in Hook. Ic. Pl. t. 662; Lond. Journ. vi. p. 409).

Hab. Port Arthur (?), *Gunn* (more probably at Circular Head). Southport, *C. Stuart.*

Distrib. Also found, but without fruit, in Western Australia, *W. H. H.*

We have no new facts to state respecting this curious and little-known plant, except that on Mr. Stuart's specimen we find *antheridia,* similar to those of a *Callithamnion,* occupying the place of *tetraspores.*

Gen. CXI. GRIFFITHSIA, *Ag.*

(Ag. Sp. Alg. ii. p. 126. J. Ag. Sp. Alg. ii. p. 75. Kütz. Sp. Alg. p. 659.)

1. **Griffithsia corallina** (Ag. Syst. p. 145; J. Ag. Sp. Alg. ii. p. 79; Harv. Phyc. Brit. t. 214). —G. flabelliformis, *Harv. Lond. Journ.* iii. *p.* 450.

HAB. In the Tamar, common.

DISTRIB. Native of northern hemisphere.

2. **Griffithsia antarctica** (Hook. fil. et Harv. Fl. Ant. ii. p. 488; J. Ag. Sp. Alg. ii. p. 87; Fl. N. Zeal. ii. p. 258).

HAB. Brown's River, *Gunn.* Georgetown (a variety?), *W. H. H.*

DISTRIB. Falkland Islands, Cape Horn, and New Zealand.

3. **Griffithsia monilis** (Harv.); fronde basi radicante cæspitosa dichotoma fastigiata crassissima, segmentis erecto-patentibus, articulis diametro sesquilongioribus globoso-inflatis siccitate collapsis et ovalibus ad genicula maxime constrictis, fertilibus conformibus, involucris tetrasporarum circa genicula verticillatis.—*Harv. in Trans. R. I. Acad.* xxii. *p.* 559. (TAB. CXCV. *B.*)

HAB. Parasitical on *Algæ,* at Georgetown, *Gunn.*

DISTRIB. West and south coasts of New Holland.

A beautiful little species, whose branches resemble strings of ruby-coloured beads. The colour is very quickly discharged.—PLATE CXCV. *B.* Fig. 1, fronds, *nat. size;* 2, tip of a branch, bearing favellæ; 3, a tip, bearing sorus of tetraspores; 4, tetraspores from the same:—the latter figures *magnified.*

4. **Griffithsia setacea** (Ag.; J. Ag. Sp. Alg. ii. p. 84; Kütz. Sp. Alg. p. 660; Harv. Phyc. Brit. t. 184).

HAB. Georgetown, common.

DISTRIB. Native of northern hemisphere.

All the specimens we have seen are barren; the species therefore cannot be ascertained with certainty.

5. **Griffithsia? gracilis** (Harv.); frondibus capillaribus sursum attenuatis arachnoideis dichotomis fastigiatis, ramulis minoribus sæpe secundis, axillis patentibus, articulis cylindraceis diametro multiplo-longioribus, apicibus obtusis.

HAB. Georgetown, *W. H. H.*

Fronds 2–3 inches high, very slender, and much attenuated to the apex, pretty regularly dichotomous and fastigiate, forming flabelliform tufts. *Articulations* very long, cylindrical. *Colour* a bright rosy-red, instantly given out in fresh-water. *Substance* soft.—Very few specimens have yet been seen, and these without fructification. The species therefore wants further confirmation.

Gen. CXII. BALLIA, *Harv.*

(Harv. in Hook. Lond. Journ. ii. p. 191. J. Ag. Sp. Alg. ii. p. 74. Kütz. Sp. Alg. 663.)

1. **Ballia callitricha** (Mont. Voy. Pôl. Sud, p. 94; Kütz. Sp. Alg. p. 663; J. Ag. Sp. Alg. ii. p. 75; Fl. N. Zeal. ii. p. 257).—B. Brunonis, *Harv. Lond. Journ.* ii. *p.* 191. *t.* 9. B. Hombroniana, *Mont. Pôl. Sud, t.* 12. *f.* 1. Sphacelaria callitricha, *Ag. Sp. Alg.* ii. *p.* 23; *Ic. Alg. Eur. t.* 6.

HAB. Various parts of the coast.

DISTRIB. All through the Southern Ocean.

2. **Ballia Robertiana** (Harv.); ramis minoribus rachidibusque pinnularum cylindraceis (nec ad genicula constrictis) distiche plumulatis, plumulis incurvis oblongis oppositis inter se alterne inæqualibus,

una pusilla pinnata vel vage multifida pinnulis inflexis, altera elongata bipinnata basi ramulis incurvis vage divisis fructiferis stipata, pinnis ambitu ovatis, pinnulis oppositis incurvis creberrimis.—*Harv. in Ann. Nat. Hist.* xv. *p.* 332; *Phyc. Austr. t.* 36.

HAB. Southport, *C. Stuart.*

DISTRIB. Coast of Victoria, at Port Fairy.

3. **Ballia scoparia** (Harv. Alg. Exsic. Austr. n. 502).—Callithamnion scoparium, *Hook. fil. et Harv. Fl. Ant.* ii. *p.* 490. *t.* 189. *f.* 3; *J. Ag. Sp. Alg.* ii. *p.* 35.

HAB. Mouth of the Tamar, and at Port Arthur.

DISTRIB. Antarctic Ocean.

Gen. CXIII. CORYNESPORA, *J. Ag.*

(J. Ag. Sp. Alg. ii. p. 69.)

1. **Corynespora arachnoidea** (Harv.); fronde tenuissima arachnoidea (2–3-unciali) e basi dichotome decomposita ramis lateralibus pluries furcatis obsita, axillis acutis, ramulis ad genicula subcontractis, apicibus cylindraceis attenuatis obtusis, articulis longissimis, tetrasporis ovalibus grumosis pedicellatis.

HAB. Georgetown, *W. H. H.*

Two to three inches high, densely tufted. *Filaments* excessively slender, nearly of one diameter throughout, except in the ultimate divisions, many times dichotomous, the lateral dichotomies not always regular, and then as if set with alternate dichotomous branches. The *articulations* in all parts of the plant are of great length. The *colour* is rose-red. *Tetraspores?* (or *spores*) pedicellate, oval, containing a granular mass, not divided into sporules. —It is difficult to examine this plant after having been once dried, as it will not bear remoistening with fresh-water, and adheres so strongly to paper that it is impossible to separate it without breaking.

Gen. CXIV. CALLITHAMNION, *Lyngb.*

(Lyngb. Hyd. Dan. p. 122. J. Ag. Sp. Alg. ii. p. 5. Harv. Phyc. Brit. etc.)

1. **Callithamnion comosum** (Harv. Lond. Journ. Bot. iii. p. 451).

HAB. In the Tamar, above Georgetown, abundant.

2. **Callithamnion Plumula** (Ag.; Harv. Phyc. Brit. t. 242; J. Ag. Sp. Alg. ii. p. 29).—Conferva Plumula, *Ellis; Dillw. Conf. t.* 50.

HAB. Georgetown, rare, *Gunn, W. H. H., Archer.*

DISTRIB. Europe.

In the Tasmanian specimens the ramuli are more squarrose than usual, and in the older parts of the frond finally become, through excessive branching, densely fasciculate.

3. **Callithamnion cruciatum?** (Ag.; J. Ag. Sp. Alg. ii. p. 28; Harv. Phyc. Brit. t. 164; Kütz. Sp. Alg. p. 649; Harv. Alg. Exsic. n. 545).

HAB. Georgetown, very rare, *Gunn, W. H. H.*

DISTRIB. Europe.

The Tasmanian specimens differ from the European chiefly in the ramification of the opposite plumules, the ramuli being very generally alternate, not opposite, and sometimes forked, and the rachis being angularly bent, and not straight. The apices are quite blunt. Possibly it would be better to consider the present form as a distinct but *representative* species. It must however be allowed that its European representative varies greatly in the composition of its plumules.—I formerly, by mistake, communicated to Professor Agardh a poor specimen of the follow-

ing species, under the name "*cruciatum*," having been misled by external resemblance. The species are abundantly distinct, the following being one of large size, originally described by me as "*Spyridia pellucida*."

4. **Callithamnion mucronatum** (J. Ag.); fronde elata (pedali et ultra) ultra setacea sursum longe filis stuposis quasi hirsuta et corticata decomposite ramosissima, ramis setaceis pellucide articulatis virgatis alterne ramosis erecto-patentibus strictis ad genicula pinnatis, pinnis oppositis simplicibus subulatis versus apicem densissimis acute mucronatis, favellis ramulos terminantibus.—*J. Ag. Sp. Alg.* ii. *p.* 29; *Harv. Alg. Exsic. n.* 546. Spyridia? pellucida, *Harv. in Lond. Journ. Bot.* iii. *p.* 449.

Hab. At and above Georgetown, common.

Distrib. Western Port, Victoria.

Root a mass of matted fibres, often an inch in diameter. *Stems* many from the same base, a foot or more in length, twice as thick as hog's-bristle, and appearing still thicker from the stupose filaments which densely cover them for more than half their length. These principal stems are sparingly divided, but emit throughout their length a profusion of closely-placed setaceous branches, 4–6 inches long, and once, twice, or thrice alternately compounded, the ultimate divisions being from half an inch to an inch in length. All the axils are acute, and the branches and ramuli erecto-patent. The branches and ramuli are pellucidly articulate, and each node bears a pair of minute, subulate, mucronate pinnules, 1–2 lines long, and generally simple, sometimes very erect and close-pressed, sometimes more patent. *Colour* a deep rose-red. *Substance* somewhat cartilaginous, rather rigid.—By right the specific name "*pellucidum*," published in 1844, ought to be retained; but I waive priority in favour of the more appropriate one conferred in 1851 by Professor Agardh, who had however a miserably imperfect specimen to describe from. The species varies much in size, and somewhat in other respects, but is strongly marked by its mucronate, subulate pinnules.

5. **Callithamnion Turneri,** var. *repens* (J. Ag. Sp. Alg. ii. p. 23; Harv. Phyc. Brit. t. 179; Harv. Alg. Exsic. n. 521.)—Conferva repens, *Dillw.*

Hab. On *Xiphophora*, at Port Arthur, *W. H. H.*

Distrib. Europe.

6. **Callithamnion flaccidum** (Hook. fil. et Harv. Lond. Journ. Bot. iv. p. 273; Fl. Antarct. ii. t. 188. f. 1; Kütz. Sp. Alg. p. 648; J. Ag. Sp. Alg. ii. p. 31).

Hab. Tasmania, *Gunn.*

Distrib. Antarctic Ocean.

The specimens are not in good order.

7. **Callithamnion latissimum** (Harv. Lond. Journ. Bot. iii. p. 452; J. Ag. Sp. Alg. ii. p. 50).—Phlebothamnion latissimum, *Kütz. Sp. Alg. p.* 656.

Hab. Abundant in the Tamar.

8. **Callithamnion angustatum** (Hook. fil. et Harv. in Lond. Journ. Bot. vi. p. 412; J. Ag. Sp. Alg. ii. p. 64).

Hab. Georgetown, rare, *Gunn, W. H. H.*

9. **Callithamnion violaceum** (Harv.); cæspitosa, purpurea, frondibus capillaribus basi in funiculis intertextis sursum longe filis radicantibus stuposis pellucide articulatis decomposito-pinnatis, ramis quoquoversum egredientibus basi pinnatis apice bipinnatis, plumulis simpliciter pinnatis, pinnulis patentibus filiformibus elongatis, articulis ramorum diametro sextuplo ramulorum triplo longioribus, tetrasporis ad pinnulas sessilibus subsolitariis globosis.—*Harv. Alg. Exsic. n.* 517.

Hab. On the woodwork of the jetty at Georgetown, *W. H. H.*

A small species, 2–3 inches high, not unlike the northern *C. roseum*, but differing in several respects. The principal branches are bundled together into ropes, and then closely interwoven by root-like fibres, which issue from the nodes, and proceed downwards along the stem, forming an accessory stupose stratum. The branches are alternately pinnate below, and bipinnate above, all the pinnules remarkably patent and elongate. *Tetraspores* are thinly scattered on the inner faces of the pinnules.

10. **Callithamnion conspicuum** (Harv.); fronde elata incrassata per totam longitudinem stuposo-corticata et hirsuta decomposite ramosa, ramis conformibus alternis attenuatis repetite alterne divisis, ramulis solum ecorticatis articulatis dense ramellosis, ramellis quaquaversis alterne pinnatis, pinnis incurvis, articulis pinnularum diametro triplo longioribus, tetrasporis ad latera pinnularum sessilibus solitariis.—C. tingens, *Harv. Alg. Exsic. n.* 508. Spongoclonium conspicuum, *Sond.! in Linn.* xxvi. *p.* 515.

Hab. Georgetown.

Distrib. South coast of Australia.

Frond 12–18 inches long, the main stem generally undivided, 1 or 2 lines in diameter, set throughout its whole length with closely placed lateral branches directed to all sides. *Branches*, like the stem, thickly corticated and shaggy with stupose filaments, ½–1 line in diameter, 6–8 inches long, repeatedly compounded with alternate lateral branches and branchlets. The ultimate divisions, which are from half an inch to an inch in length, are alone visibly articulate, and are thickly clothed with short, pinnulate, incurved, articulate ramelli, on which the tetraspores are borne. *Colour* a fine carmine, which is quickly given out in fresh-water, staining the paper on which the plant may be dried. *Substance* very tender, rapidly decaying.—The habit of this species is peculiar, and perhaps, with *C. plumigerum* and *C. superbiens*, it might form a separate genus, characterized by the peculiarly inarticulate and hirsute stem. But there are many intermediate links with species of more ordinary characters. The diameter attained by the stem is greater than in any other known species.*

11. **Callithamnion laricinum** (Harv.); fronde cartilaginea setacea (1–5-unciali) fere ad apices ramorum corticata glabra quoquoversum ramosa ambitu pyramidali, ramis alternis patentibus superne sensim brevioribus ramulis dichotomo-multifidis undique obsessis, ramulis pluries dichotomis, segmentis patentibus, ultimis brevissimis spinæformibus, favellis geminis oblongis simplicibus v. furcatis, tetrasporis globosis ad latera ramulorum sparsis.—*Harv. in Trans. R. I. Acad.* xxii. *p.* 562.

Hab. On *Zostera*, etc. Port Arthur, *W. H. H.*

Distrib. West and south coasts of Australia.

12. **Callithamnion dispar** (Harv.); fronde pellucide articulata capillari plus minus pinnatim ramosa disticha, ramis primariis paucis inæqualibus virgatis bipinnatis, pinnis oppositis patentibus inæqualibus una abbreviata altera elongata pinnulata, pinnulis oppositis æqualibus horizontalibus crassis multifidis mucronatis, articulis ramorum diametro duplo pinnarum sesquilongioribus, pinnularum diametro æqualibus, tetrasporis ad latera pinnularum sessilibus.—*Harv. Alg. Exsic. n.* 509.

Hab. East coast; parasitic on *Mychodea disticha*, *Gunn.*

Distrib. Port Fairy, Victoria, *W. H. H.*

Fronds solitary or few together, 1–2 inches high, with a simple stem set with lateral branches, a few of which are long and virgate, the rest reduced to a line or two in length. All the branches and their divisions and ramuli are opposite. The lesser divisions are regularly pinnated, the pinnæ long and short alternately at either side of the

* Since this was written, I have ascertained that my *C. tingens* is the same as Sonder's *Spongoclonium conspicuum*, which name will be adopted if the plant be removed from *Callithamnion*. Another synonym is my *Lasiothalia hirsuta*, in Trans. R. I. Acad. xxii. p. 558, founded on a very imperfect and battered scrap of what I afterwards called *Callithamnion tingens* when more perfect specimens were collected.

branch. The *ramuli* are very robust, sparingly or copiously divided, the tips of their divisions mucronate. *Substance* rather rigid. *Colour* a deep red.

13. **Callithamnion elongatum** (Harv.); frondibus fusco-purpureis dense cæspitosis basi intertextis longissimis setaceis e basi pellucide articulatis dichotome compositis et ramis alternis obsitis, ramis minoribus secunde alterne v. dichotome ramosis versus apicem ramulos crebre dichotomos ferentibus, articulis superioribus diametro 4–5-plo longioribus, inferioribus longioribus, tetrasporis triangule divisis ad genicula ramulorum fasciculatis breve pedicellatis, favellis versus apices ramulorum solitariis.—*Harv. Alg. Austr. Exsic. n.* 534.

Hab. Georgetown, not uncommon.

Distrib. South coast of Australia.

Fronds in large bundled tufts, often upwards of a foot in length, setaceous, not much attenuated upwards, the principal stems towards the base twisted round each other into ropes, which strengthen the tuft. The whole branching is on a dichotomous type, but by suppression, it is very irregular, a compound of the alternate, secund, and dichotomous. The penultimate divisions throw off from their sides short, multifid, or regularly dichotomous ramuli, which bear fructification of both kinds, on different individuals. The *favellæ* are usually solitary; the *tetraspores* several together, tufted or somewhat whorled round the nodes of the ramuli. *Colour* a dark brownish-purple, sometimes rather brighter. *Substance* somewhat gelatinous, but firm, like that of *Griffithsia setacea.*

14. **Callithamnion Griffithsioides** (Sond.); cæspitosum, coccineum, frondibus basi intertextis setaceis pellucide articulatis dichotomis fastigiatis, ramis pluries furcatis, axillis acutis versus apicem ramulos minutos multifidos ferentibus, ramulis crebre ramulosis fere corymbosis fructiferis, tetrasporis prope apices ramulorum fasciculatis pedicellatis, articulis cylindraceis diametro 6–8-plo longioribus.—C. Griffithsiæ, *Harv. Alg. Austr. Exsic. n.* 535.

Hab. Georgetown, rare, *Gunn.*

Distrib. Port Phillip, *D. Mueller, W. H. H.*

Tufts dense, 4–5 inches long, fastigiate, bright-crimson, in habit resembling those of *Griffithsia setacea.* The branching is pretty regularly dichotomous, the forks rather distant, and the branches and their divisions consequently naked, except at the extremity, where the branch (of fertile specimens) ends in a minute, corymbose, multifid ramulus that bears the tetraspores.—The species is nearly related to the preceding, but I think distinct.

15. **Callithamnion fastigiatum** (Harv.); fronde pellucide articulata (1–2-unciali) sursum attenuata decomposita dichotome fastigiata, ramis repetite furcatis erecto-patentibus, ramulis ultimis ad genicula minute spinulosis v. gemmiferis, articulis omnibus diametro sub-4-plo longioribus, favellis subbinis nudis ad axillas ramorum, tetrasporis cruciatim divisis ad genicula ramulorum sessilibus sæpe oppositis nunc solitariis nunc 2–3-fasciculatis.

Hab. Georgetown, *Gunn.*

Frond very slender, 1–2 inches high, flabelliform and nearly regularly dichotomous and fastigiate, rose-red. The nodes of the upper or ultimate ramuli are generally furnished with minute, bud-like or somewhat spinous processes, which perhaps afterwards develope into tetraspores. The *tetraspores* are oval, and cruciately divided.—In habit this somewhat resembles *Ceramium fastigiatum*, but in softness of substance, ramification, etc., it has more the character of a very slender *Griffithsia.*

16. **Callithamnion botryocarpum** (Harv.); nanum, penicillato-cæspitosum, fronde minuta (1–2 lineas alta) e basi ramosissima, ramis alternis v. secundis patentibus flexuosis nunc subsquarrosis, articulis diametro 4-plo longioribus, tetrasporis magnis triangule divisis in glomerula ad axillas ramorum densissime

aggregatis, antheridiis botryoideis e quoque fere articulo ramorum sæpe evolutis.—*Harv. in Trans. R. I. Acad.* xxii. *p.* 563.

Hab. Parasitic on *Algæ*. Piper's River, *Gunn*.

Distrib. King George's Sound, on *Chorda lomentaria*, *W. H. H.*

Allied to the British *C. Daviesii*, *C. virgatulum*, etc.

17. **Callithamnion? paradoxum** (Harv.); fronde spongiosa quaquaversum ramosa in totum e filis radicantibus densissime intertextis conflata ambitu pyramidali, ramis lateralibus densissime tomentosis simplicibus v. iterum lateraliter compositis, ramulis (quasi villum ramorum) brevibus pinnatis, pinnis alternis paucis longissimis flexuosis obtusis, articulis pinnularum diametro subtriplo longioribus, tetrasporis ad latera pinnularum sessilibus solitariis.

Hab. Brown's River, *Gunn*.

Spongy frond 6–8 inches long, with a pyramidal outline, alternately branched, the branches simple or again laterally compounded, spreading to all sides. There does not appear to be any central filament or axis (possibly it may have perished), but the branches are composed of slender rooting filaments, densely woven together into a spongy rope (much as in *Ectocarpus tomentosus*), and these throw off a periphery of subhorizontal, pinnate ramuli, 1–2 lines long, which give the surface of the compound frond a shaggy or woolly appearance. These ramuli are once pinnated, the pinnæ few, curved, and alternating on the short rachis. *Tetraspores* are borne on the sides of the pinnæ, as in others of the genus.—As yet I have seen but few specimens of this anomalous plant, and these not in good order; but I have no hesitation in admitting it, whether to this genus or not, as a distinctly marked species.

Series III. CHLOROSPERMEÆ.

Tribe I. *SIPHONEÆ.*

Gen. CXV. CAULERPA, *Lamour.*

(Lamour. An. Mus. xx. p. 282. Ag. Sp. Alg. i. p. 433. Kütz. Sp. Alg. p. 495.)

1. **Caulerpa hypnoides** (Ag. Sp. Alg. i. p. 443; Sond. Pl. Preis. ii. p. 150; Kütz. Sp. Alg. p. 497).—Fucus hypnoides, *Turn. t.* 173.

Hab. Georgetown, not uncommon.

Distrib. Australia and New Zealand.

2. **Caulerpa obscura** (Sond. Pl. Preis. ii. p. 150; Kütz. Sp. Alg. p. 497).

Hab. Tasmania, *Gunn*. (A single specimen.)

Distrib. Found all along the coast of Australia, from Swan River to Western Port, Victoria.

The *ramenta*, described by Sonder as "*quadrifarious*," are not constantly so. In the more luxuriant specimens they are generally distichous. I have not seen specimens of Greville's *C. superba* from Bass's Straits, but the figure given is not unlike some of the laxer states of *C. obscura*.

3. **Caulerpa furcifolia** (Hook. fil. et Harv. Lond. Journ. vi. p. 416; Fl. N. Zeal. ii. p. 260. t. 121 *B*).

Hab. Common at Georgetown.

Distrib. Australia.

4. **Caulerpa Brownii** (Endl.; Hook. fil. et Harv. Fl. N. Zeal. ii. p. 260. t. 121 *A*).

Hab. Port Arthur.

Distrib. New Holland and New Zealand.

5. **Caulerpa Harveyi** (Muell.); surculo et parte inferiori caulis nudo nitente, caule vage ramoso, ramis paucis elongatis simplicibus densissime foliosis, ramentis (foliis) sæpius quinquefariis raro quadrifariis longissimis filiformibus patentibus apice obtuse mucronulatis.—*Harv. Phyc. Austr. t.* 95.

Var. *β. crispata;* minor, ramentis crispatis squarrosis v. inflexis.

Hab. Fragments sent by *Mr. Gunn.*

Distrib. Native of the south coast of New Holland.

Surculus branching, 1 or 2 lines in diameter, with a smooth and shining yellow epidermis. *Stem* 1–2 feet high, bare of leaves for some two to four inches above the base; from thence to the apex closely set with five or rarely four vertical or slightly spiral ranks of patent, filiform leaves or ramenta. Sometimes the stem is quite simple, but commonly it bears a few lateral, leafy branches, in all respects similar to the leafy portion of the stem. *Branches* long and virgate, patent, irregularly inserted. *Leaves* (or ramenta) nearly an inch long, as thick as hog's-bristle, subacute and somewhat mucronate, of a deep-green colour, becoming olivaceous when dry; the apices, where the younger leaves are densely crowded together, frequently orange.—Dried specimens give no clear idea of the living plant, as it is impossible to preserve in drying the regular *ranks* in which the leaves are set, and in which they stand parallel to each other. Our var. *β* is a dwarf form, growing in tide-pools. It is always of a pale-green colour, and its *ramenta* more or less curled, or rolled in upon the axis.

6. **Caulerpa sedoides** (Ag. Sp. Alg. i. p. 438; Endl. 3rd Suppl. p. 16; Kütz. Sp. Alg. p. 498). —Caulerpa geminata, *Harv.* Fucus sedoides, *Turn. Hist. t.* 172.

Hab. On crevices of tidal rocks: Five-mile Bluff, etc., *Gunn.*

Distrib. Native of tropical and subtropical seas.

Sometimes the ramenta are perfectly distichous, in which state I formerly mistook it for a new species, which I called *C. geminata.* I have since traced the two forms into one. Some others of the genus vary in a similar way, distichous and tetrastichous ramenta being sometimes found on the same root.

7. **Caulerpa simpliciuscula** (Ag. Sp. Alg. i. p. 439; Kütz. Sp. Alg. p. 499).—Fucus simpliciusculus, *Brown; Turn. Hist. t.* 175.

Hab. Georgetown, etc., *Gunn, W. H. H.*

Distrib. West and south coasts of New Holland.

8. **Caulerpa scalpelliformis** (Ag. Sp. Alg. i. p. 437; Kütz. Sp. Alg. p. 496).—Fucus scalpelliformis, *R. Br. Turn. Hist. t.* 174.

Hab. Dredged in the Tamar, *Mr. Charles Henty.*

Distrib. West and south-west coasts of New Holland.

I saw specimens of this species, which is found all along the south coast of New Holland, with Mr. Henty, who had dredged them below Georgetown. It has not been sent by Mr. Gunn, and appears to be rare.

9. **Caulerpa cactoides** (Ag. Sp. Alg. i. p. 439; Harv. Phyc. Austr. t. 26).—C. corynephora, *Mont. Voy. Pôl. Sud, p.* 18. *t.* 6. *f.* 3; *Sylloge Sp. Crypt. p.* 452. *n.* 1600. Fucus cactoides, *R. Br. in Turn. Hist. t.* 171.

Hab. Southport, *C. Stuart.*

Distrib. Western and southern coast of New Holland; Isle of Toud.

Mr. Stuart's specimen is smaller than the usual Australian form, such as we are acquainted with, from Western Australia and from Victoria, but it is fully as large as the specimen figured by Montagne. Turner's *Fucus cactoides* is intended for the larger variety of this species, but it incorrectly represents the club-shaped ramuli as being quadrifarious. They are always strictly distichous in our numerous specimens from several localities.

Gen. CXVI. CODIUM, *Stack.*

(Stack. Ner. Brit. p. 24. Ag. Sp. Alg. i. p. 451. Kütz. Sp. Alg. p. 500.)

1. **Codium tomentosum** (Ag. Sp. Alg. i. p. 451; Kütz. Sp. Alg. p. 500; Harv. Phyc. Brit. t. 93).—Fucus tomentosus, *Turn. Hist. t.* 135; *E. Bot. t.* 712.

HAB. Georgetown and seacoast generally, common.

DISTRIB. Found throughout the northern, tropical, and southern oceans.

Gen. CXVII. DICTYOSPHÆRIA, *Dcne.*

(Dcne. in Nouv. An. Sc. Nat. xvii. p. 328.)

1. **Dictyosphæria sericea** (Harv.); fronde umbilicata medifixa varie lacera (nunquam vesicata) sericea, vesiculis minimis globoso-polyhedris.—*Harv. in Trans. R. I. Acad.* xxii. *p.* 565. (TAB. CXCVI. *A.*)

I venture to introduce this plant as *probably* occurring on the outer coasts of Tasmania. It is found abundantly on rocks near low-water mark, in crevices, on the west and south coasts of New Holland, at least as far as Western Port, Victoria.—PLATE CXCVI. *A.* Fig. 1, plant, *nat. size;* 2, portion of frond, *magnified.*

TRIBE II. *BATRACHOSPERMEÆ.*

Gen. CXVIII. BATRACHOSPERMUM, *Roth.*

(Roth, Fl. Germ. iii. p. 480. Ag. Syst. p. 23. Endl. 3rd Suppl. p. 22. Kütz. Sp. Alg. p. 535.)

1. **Batrachospermum atrum** (Harv. Man. ed. 1. p. 120; Hass. Br. Fresh-water Alg. p. 114. t. 16. f. 12).—B. moniliforme, *var.* detersum, *Ag.; Kütz. Sp. Alg. p.* 535. Conferva atra, *Dillw. t.* 11; *E. Bot. t.* 690.

HAB. Pools in a rivulet, near Launceston, *Gunn* (*n.* 1826).

DISTRIB. Native of fresh-water streams in Europe.

2. **Batrachospermum moniliforme** (Roth, Ag. Syst. p. 53; Kütz. Sp. Alg. p. 535).—Conferva gelatinosa, *Dillw. t.* 32.

HAB. Mountain stream, near Cheshunt, *W. H. H.*

DISTRIB. Native of Europe and America.

3. **Batrachospermum vagum** (Ag. Syst. p. 52; Kütz. Sp. Alg. p. 536).

HAB. In the Cataract River, Launceston, *W. H. H.*

DISTRIB. Native of Europe and America.

TRIBE III. *CONFERVEÆ.*

Gen. CXIX. CLADOPHORA, *Kütz.*

(Kütz. Phyc. Gen. p. 269. Kütz. Sp. Alg. p. 387. Harv. Phyc. Brit., etc.)

1. **Cladophora Feredayi** (Harv.); longiuscule stipitata, lætevirens, siccitate vitreo-nitens, rigidiuscula, filis longissimis setaceis angulatim flexuosis decomposite di-trichotomis et alterne ramosis, ramis nunc discretis nunc intertextis flexuosis pluries divisis, ramulis ultimis dense fasciculatis, articulis ramorum longissime cylindraceis diametro 20–30-plo longioribus, ramulorum ad genicula contractis diametro 5–6-plo longioribus.—*Harv. Alg. Austr. Exsic. n.* 584; *Phyc. Austr. t.* 47.

HAB. Georgetown, in deep water, *Rev. I. Fereday, Gunn, W. H. H., etc.*

Stipes 1–2 inches long, cylindrical, consisting of a single cell. Above this stipes the filament is prolonged to 12 or 20 inches, preserving the diameter of hog's-bristle, and becoming excessively branched in a manner partly trichotomous, partly dichotomous, and partly irregular. The *branches* are much bent, and often tangled together, and repeatedly forked; their penultimate segments are long and filiform, flexuous, and furnished at the angles with a tuft of short, densely crowded ramuli. In some specimens the branches are bare of ramuli. The *substance* is rigid and crisp, not collapsing when removed from the water. The *colour* is a full grass-green.

2. **Cladophora Bainesii** (F. Muell. et Harv.); longiuscule stipitata, flavo-viridis, siccitate vitreo-nitens, mollissima, filis basi setaceis mox capillaribus sursum maxime attenuatis elongatis di-trichotomis ramosissimis, ramis trichotomo-multifidis ramulis lateralibus polychotomis onustis, ramulis ultimis longe filiformibus apice acutis mucronatis, articulis ramorum longissime cylindraceis diametro 20–30-plo longioribus ad genicula constrictis, ramulorum diametro 6–10-plo longioribus.—*Harv. Alg. Exsic. n.* 579; *Phyc. Austr. t.* 112.

HAB. Georgetown.

DISTRIB. Port Phillip, *Baines, W. H. H., etc.*

Stipes as in the last species, to which this is allied in several respects, but is a much more slender, softer, and brighter-coloured plant, attenuated at its extremities to an extreme fineness. Both belong to the section of the European *C. pellucida*, and have nearly similar ramification. The present species grows 6–12 inches long, and closely adheres to paper in drying. It is very glossy in a dried state.

3. **Cladophora gracilis** (Griff. in Wyatt's Alg. Danm. n. 97; Harv. Man. ed. 1. p. 137; Harv. Phyc. Brit. t. 18; Fl. N. Zeal. ii. p. 263).

HAB. Georgetown, *Gunn.*

DISTRIB. Europe and New Zealand.

4. **Cladophora gracillima** (Harv.); cæspitosa, flavo-viridis, mollissima, siccitate sericea, filis 6–12-uncialibus tenuissimis decomposito-ramosissimis, ramis ramulisque repetite alternis v. secundis pluries compositis, ramulis sæpe alterne secundis, articulis ramorum diametro 5–6-plo longioribus, ramulorum subbrevioribus, apicibus obtusis.—*Harv. Alg. Exsic. n.* 588.

HAB. Georgetown, *W. H. H.*

Allied to *C. gracilis*, but much more slender, softer, and more silky.

5. **Cladophora ferruginea** (Harv.); cæspite (ferrugineo) brevi unciali globoso v. stellatim patente fastigiato spongioso, filis intertextis radicantibus parum ramosis, ramis ramulisque erectis strictis, articulis diametro 3–4-plo longioribus.

HAB. On *Hormosira Banksii*, at Safety Cove, Port Arthur, *W. H. H.*

This has the habit of *C. uncialis*, to which it is nearly allied. All our specimens are stained, apparently with ferruginous matter, so that till placed under a lens they may be taken to belong to an *Ectocarpus*.

6. **Cladophora Stuartii** (Harv.); filis capillaribus tenuibus rigidiusculis siccitate eleganter variegatis e basi ramosis, ramis longissimis filiformibus indivisis simplicibus vel ramos secundarios similes emittentibus, ramulis brevibus patentibus sparsis alternis secundisve, articulis ad genicula contractis ramorum diametro triplo ramulorum subduplo longioribus.

HAB. Tasmania, *C. Stuart.*

Tufts 4–6 inches long, pale-green. *Filaments* divided near the base into many long, simple or subsimple, thread-like branches, which are more or less beset with short patent ramuli of five or six joints. Sometimes the branches are quite simple; sometimes the larger branches bear a second series of similar ones. When dried, the plant imperfectly adheres to paper, and is elegantly variegated with green and white when viewed with a pocket-

lens. This appearance is caused by the dispersion of the endochrome towards the dissepiments in the process of drying. The *articulations* are very uniform in all parts of the filament, those of the principal branches being thrice as long as broad, of the ramuli shorter. The *endochrome* does not recover its form on moistening after having been dried.

Gen. CXVI. CONFERVA, *Ag.*

1. **Conferva (Chætomorpha) Darwinii** (Kütz. Sp. Alg. p. 380).—Conf. clavata, *var.* Darwinii, *Hook. fil. et Harv. Fl. Ant.* ii. *p.* 493. *t.* 192. *f.* 1. (Tab. CXCVI. *C.*)

Hab. On *Algæ* and rock-pools.

Distrib. Common on the shores of Australia and New Zealand.

Plate CXCVI. *C.* Fig. 1, plant, *nat. size;* 2, terminal articulations, *magnified.*

2. **Conferva coliformis** (Mont. Voy. Pôl. Sud, p. 5).—Chætomorpha coliformis, *Kütz. Sp. Alg. p.* 380; *Tab. Phyc. t.* 62. *f.* 2.

Hab. Southport, *C. Stuart.*

3. **Conferva valida** (Hook. fil. et Harv. in Lond. Journ. vi. p. 416; Kütz. Sp. Alg. p. 379).

Hab. Georgetown, etc., common.

We have received specimens of several fresh-water *Confervæ* from Mr. Gunn; unfortunately not in a state fit for examination and description.

Gen. CXVII. TYNDARIDEA, *Bory.*

1. **Tyndaridea cruciata** (Harv. Man. Br. Alg. p. 141?).—Zygnema cruciatum, *Ag. Syst. p.* 77; *Kütz. Sp. Alg. p.* 445. T. cruciata? *and* T. latescens, *Hassall?*

Hab. In the South Esk River, *Gunn.*

We have also a specimen of another species of this genus, and more than one of *Zygnema* (*Spirogyra*), which we cannot determine from dried specimens.

Tribe IV. *ULVACEÆ.*

Gen. CXVIII. PORPHYRA, *Ag.*

(Ag. Syst. xxxii. Endl. 3rd Suppl. p. 19. Harv. Phyc. Brit. t. 92, t. 211. Kütz. Sp. p. 691.)

1. **Porphyra laciniata** (Ag. Syst. p. 190; Ag. Ic. Eur. t. 26, 27; Harv. Phyc. Brit. t. 92; Kütz. Sp. Alg. p. 692).

Hab. Rocky seacoasts. Generally diffused.

Gen. CXIX. ENTEROMORPHA, *Link.*

(Link in Hor. Phys. p. 5. Harv. Phyc. Brit.—*Solenia*, Ag. Syst. xxxii.)

1. **Enteromorpha compressa** (Grev. Alg. Brit. p. 180. t. 18; Harv. Phyc. Brit. t. 335; Kütz. Sp. Alg. p. 480).

Hab. Seashores and tidal rivers, everywhere. Also on woodwork and ships' bottoms. Generally diffused.

2. **Enteromorpha intestinalis** (Link, Hor. Phys. p. 5; Grev. Alg. Brit. p. 179; E. Bot. Suppl. t. 2756; Harv. Phyc. Brit. t. 154).

Hab. In similar places to the preceding; often in ditches of brackish water. Generally diffused.

Gen. CXX. ULVA, *Ag.*

(Ag. Syst. xxxii. Grev. Alg. Brit. p. 171.—*Ulva, Phycoseris,* and *Crasiola,* Kütz.)

1. **Ulva latissima** (Lin. Fl. Suec. p. 433; Ag. Sp. Alg. i. p. 407; Harv. Phyc. Brit. t. 171; Kütz. Sp. Alg. p. 474).

HAB. In the Tamar, Derwent, etc.; and probably all along the coast. Generally diffused.

Gen. CXXI. ŒDOGONIUM, *Link.*

(Kütz. Sp. Alg. p. 364.—*Vesiculifera,* Hass. Br. Fr. W. Alg. p. 195.—*Tiresias,* Bory.)

1. **Œdogonium monile** (Berk. et Harv.); filis basifixis brevibus tenuissimis strictiusculis, articulis cylindraceis hyalinis diametro 6–8-plo longioribus, sporidiis seriatis globosis terminalibus v. in medio fili moniliformiter intumescentibus demum sanguineis.—(TAB. CXCVI. *B.*)

HAB. In fresh-water, parasitical on water-plants, *Gunn.*

Filaments $\frac{1}{2}$ inch to 1 inch long, about $\frac{1}{2000}$ inch in diameter, covering the leaves and stems of water-plants with a thick, villous, pale-green coating. The *articulations* are cylindrical, either colourless or tinted with a pale green, and containing a few medial granules, dispersed in drying. The *sporidia* are globose, 4–5 times the diameter of the filament, and formed in moniliform strings of 4–8 each, either at the end or in the middle of the filament; the generating cell is conoidal, full of yellow-green endochrome; the sporidia are at first green, afterwards of a deep blood-red, resembling strings of rubies.—A very beautiful species, perhaps referable to Kützing's genus *Allogonium.*—PLATE CXCVI. *B.* Fig. 1, the plant, *nat. size;* 2, some filaments, *highly magnified.*

Gen. CXXII. TETRASPORA, *Link.*

(Ag. Sp. Alg. p. 414. Kütz. Sp. Alg. p. 225.)

1. **Tetraspora intricata** (Berk. et Harv.); fronde decomposito-laciniata, laciniis angustissimis ramosis, ultimis capillaribus intricatis, gonidiis quaternis, maculis ramulorum subuniseriatis.

HAB. In St. Patrick's River, 1830, *Gunn.*

The single specimen seen having been dried on paper, and very imperfectly displayed, it is impossible to do more than guess at its proper form. It seems to be cut up indefinitely into threadlike segments, the lesser ones containing often but a single row of quaternate gonidia. Mr. Berkeley remarks that it is related to the other *Tetrasporæ* much as *Monormia* is to the Nostocs. It approaches also to *Trypothallus.* We regret that the state of the specimen forbids its being satisfactorily described or figured. The gonidia are $\frac{1}{2000}$ inch in diameter.

TRIBE V. *OSCILLATORIEÆ.*

Gen. CXXIII. RIVULARIA, *Roth.*

(Ag. Syst. p. xix. Harv. Man. and Phyc. Brit.—*Physactis,* etc., Kütz.)

1. **Rivularia nitida** (Ag. Syst. p. 25; Wyatt, Alg. Danm. n. 50; Harv. Phyc. Brit. t. 68).—Physactis bullata, spiralis, et lobata, etc., *Kütz. Sp. Alg. p.* 332.

HAB. Mouth of the Tamar, *Gunn, W. H. H., etc.* Found also at Port Phillip, *W. H. H.,* and native of the coasts of Europe.

The Georgetown specimens are of large size, as usual in plants of that locality, but have all the usual characters of the species.

Gen. CXXIV. BANGIA, *Lyngb.*

(Lyngb. Hyd. Dan. p. 82. Ag. Syst. p. 25. Harv. Phyc. Brit., etc.)

1. **Bangia pulchella** (Harv.); filis brevibus basifixis simplicibus erectis cylindraceis violaceo-roseis

articulatis, articulis diametro brevioribus multistriatis, striis longitudinalibus angustis (demum in sporidia mutatis?).

HAB. Parasite on *Zostera*. Georgetown, *Gunn*.

Forming a bright, rosy-purple fringe, 2–3 lines long, on the leaves of *Zostera*. Externally it resembles *B. ciliaris*, but the microscopic character is different.

Gen. CXXV. LYNGBYA, *Ag.*

(Ag. Syst. p. 25. Kütz. Sp. Alg. p. 279. Harv. Phyc. Brit., etc.)

1. **Lyngbya ferruginea** (Ag. Syst. p. 73; Harv. Man. ed. 2. p. 226; Harv. Phyc. Brit. t. 311).
HAB. Georgetown, *W. H. H.* Native of Europe, in the sea and brackish water.

Gen. CXXVI. CALOTHRIX, *Ag.*

(Ag. Syst. p. 24. Kütz. Sp. Alg. p. 311. Harv. Phyc. Brit., etc.)

1. **Calothrix infestans** (Harv.); parasitica, æruginosa, filis primo decumbentibus alias Algas investientibus, dein ascendenti-erectis brevibus flexuosis obtusis simplicibus v. appositione ramulosis, striis endochromatis creberrimis.
HAB. Parasite on *Cladostephus ferrugineus*, at Port Arthur, *W. H. H.*

Gen. CXXVII. OSCILLATORIA, *Vauch.*

1. **Oscillatoria sp.**
HAB. In brackish water: at Georgetown, *Gunn*.

Probably referable to *O. spiralis*, Carm., or some allied species, but we confess ourselves unable to recognize the specific characters attributed to the multitudinous book-species of this genus already published, and are unwilling to add new names to the list. The specimens are not in very good order. No doubt many other "*species*" exist in Van Diemen's Land.

TRIBE VI. *NOSTOCHINÆ.*

Gen. CXXVIII. PROTOCOCCUS, *Ag. Syst. p.* 17.

1. **Protococcus monas** (Ag. Ic. Alg. Eur. t. 11; Kütz. Sp. Alg. p. 200).
HAB. On a damp wall near Launceston, *Gunn*.

This agrees very well with Agardh's figure above quoted.

NAT. ORD. IX. LICHENES.*

By the Rev. Churchill Babington, B.D., F.L.S., and W. Mitten, Esq., A.L.S.

SUBORDER I. GYMNOCARPI.

TRIBE I. *PARMELIACEÆ.*

Gen. I. USNEA, *Ach. et Auctt.*

1. **Usnea barbata** (Fries, Lich. Eur. p. 18; Bab. in Hook. Fl. N. Zeal. part 2. pp. 268, 269).
HAB. Abundant everywhere, and infinitely variable.

* The following Lichens are for the most part found in New Zealand as well as in Tasmania. Reference is accordingly made to the New Zealand Flora for the synonymy under the species here enumerated, when the plant occurs there also. In that work various remarks on the species, especially on the geographical distribution, will be found, which will not be repeated in this enumeration. The crustaceous Lichens are described by Mr. Mitten.—*C. B.*

All the European forms occur in Tasmania, as well as a modification marked *Usnea scabrida*, Tayl., in Jas. Drumm. Swan Riv. Crypt., by Dr. Taylor. It is only a very fibrillated form of *U. florida*, Ach., not much different from *U. strigosa*. Mr. Lawrence has collected barren, sorediated forms, with *a black base* and blackish extremities, without fibrillæ, which are not very unlike *U. melaxantha*, at an altitude of 3,500 feet, on the highest parts of the western range of mountains.

2. **Usnea angulata** (Ach. Syn. Lich. p. 307; Bab. l. c. p. 269).

HAB. Various parts of the island, *Gunn, Hooker, Lawrence;* but all the specimens are barren.

Mr. Gunn's specimens are above two feet long.

3. **Usnea melaxantha** (Ach. Syn. Lich. p. 303; Bab. l.c. p. 269).

HAB. Arthur's Lakes, *Gunn*. On rocks, near the springs, Mount Wellington, *Hooker, Mossman.*

Barren and sorediated, and very sparingly collected.

Gen. II. EVERNIA, *Ach.*

1. **Evernia furfuracea?** (Mann; Fries, Lich. Eur. p. 26).

HAB. Cheshunt, *Archer*, fertile.

An aged, unsatisfactory specimen, black beneath, but above more resembling *E. prunastri*, Ach.; upper surface much corrugated. Possibly something different from *E. furfuracea* or *E. prunastri*. I have not seen a description of *Evernia mundata*, Nyl., from New Holland.

Gen. III. RAMALINA, *Ach.*

1. **Ramalina calicaris** (Fries, Lich. Eur. p. 30).—Approaching var. *geniculata*, Bab. l. c.

HAB. Esk, Launceston, completely investing shrubs of *Hymenanthera angustifolia, Gunn.*

The specimens agree substantially with *R. fastigiata*, Ach., but still more with the form called *R. geniculata* by Dr. Taylor.

β. ovalis, Bab.; thallo ovali plano tenuiore, apotheciis minutis, confertis.—R. ovalis, *Tayl.! MSS.*

HAB. Tasmania, Gunn.

Apothecia minute, scattered over the surface of the somewhat membranaceous, oval frond, which is 1–2 inches long. One of the many modifications of the form called *R. fraxinea*, Ach.—Laurer's var. *membranacea*, Bab. l. c., has the fronds narrower and longer, and the apothecia marginal; but it is perhaps hardly worth while to dwell on minute differences in this most variable genus.

2. **Ramalina pusilla** (Fries, Lich. Eur. p. 29; Nyl. Enum. p. 99).

HAB. Macquarrie Plains, on decayed wood, *Oldfield*. Recherche Bay, dead twigs, Lake St. Clair, St. Patrick's River, *Gunn*. Cheshunt, on live bark and dead twigs, *Archer.*

I have already, in the 'Flora of New Zealand,' expressed an opinion that this is not distinct from the foregoing.

Gen. IV. PELTIGERA, *Hoffm., Fries.*

1. **Peltigera polydactyla** (Fries, Lich. Eur. p. 46; Bab. l. c. 271).

HAB. Cheshunt, *Archer*. Collected also in Tasmania by *Lawrence, Gunn, Stuart,* and *Hooker.*

Various specimens differ amongst each other in the consistency of the thallus; some of Mr. Archer's specimens are coriaceous, others quite membranaceous.

2. **Peltigera horizontalis** (Fries, Lich. Eur. p. 47).

HAB. Cheshunt, *Archer.*

Well-marked fertile specimens. Seemingly rare in the southern hemisphere, but occurring in the Himalaya Mountains, as well as in Europe and North America.

3. **Peltigera canina,** var. *pusilla.*

HAB. Southport, *Stuart.*

Gen. V. NEPHROMA, *Ach.*

1. **Nephroma australe** (A. Rich. Fl. N. Zeal. p. 31; Voy. de l'Astrol. pl. ix. f. 2; Bab. l. c. p. 271).—N. pallens ?, *Nyl. Enum. Lich. p.* 101.

HAB. On bark: Cheshunt, *Archer.* Mount Wellington, *Hooker.*

Nylander's enumeration omits all notice of *N. australe.*

2. **Nephroma cellulosum** (Ach. Syn. Lich. p. 242).—(TAB. CXCIX. *A.*)

HAB. Rotten wood: Johnny's Creek, *Oldfield.* Cheshunt, on dead wood, *Archer.* Mount Wellington, *Hooker* and *Gunn.*

The specimens (of a deep-brown colour) agree with one from Staten Land marked *Nephroma cellulosum* in Menzies' handwriting. *N. plumbeum,* Mont.! Fl. Fern. n. 7, seems to be the same plant, but somewhat paler, which has been found also by Gunn. Found in Chili, according to Nylander (who keeps *N. plumbeum* and *N. cellulosum* distinct), as well as in Juan Fernandez.—PLATE CXCIX. *A.* Fig. 1, apothecium; 2, under surface of ditto; 3, portion of ditto, cut longitudinally; 4, sporidia; 5, gonidia:—*all magnified.*

Gen. VI. STICTA.

A. CHRYSOSTICTA, Bab. l. c.

1. **Sticta aurata** (Ach. Bab. l. c.).—S. rubella, *Tayl.! in Hook. Lond. Journ. Bot.* iii.; *Lich. Antarct. n.* 96.

HAB. Cheshunt, on wood, *Archer.* St. Patrick's River, on granite, *Gunn.* Mount Wellington (fertile), *Hooker.*

A pulverulent, villous form, but which does not deserve to be considered as a variety.

2. **Sticta crocata** (Ach. Meth. Lich. p. 277; Bab. l. c.).

HAB. Among Mosses, on wood, etc. Everywhere, *all collectors.*

Fertile specimens are bright, and often much pitted, and, being destitute of the yellow soredia which are usually present on the barren fronds, wear a somewhat different appearance to the European state of the plant.

3. **Sticta Colensoi** (Bab. l. c. t. 123).

HAB. Very abundant in forests, on *Fagus, Gunn, Hooker.*

Less divided than the New Zealand form.

4. **Sticta orygmæa** (Ach. Meth. Lich. p. 277).

HAB. Southport, *Stuart.*

B. LEUCOSTICTA, Bab. l. c.

5. **Sticta latifrons** (A. Rich. Fl. N. Zeal. p. 27. t. 8. f. 2; Bab. l. c.).

HAB. On rocks: near the caves, Back River, *Oldfield.* Running over sticks among Mosses, *Hooker.*

Some specimens are less distinctly flabelliform than the ordinary state of the plants; others, collected by Mr. Oldfield, resemble the common type, but are much smaller.

6. **Sticta filicina** (Ach. Meth. Lich. p. 276; Bab. l. c.).

HAB. Johnny's Creek, Back River Gully, etc., *Oldfield.* Cheshunt, on wood, *Archer.*

Specimens not fully grown, but evidently belonging to this species.

7. **Sticta Richardi** (Mont.! Fl. Fern. n. 79; Bab. l. c.).

HAB. Among Mosses, *Gunn.*

Very near the following.

8. **Sticta foveolata** (Delise, Stict. p. 101. t. 8. f. 36; Bab. l. c.).—(TAB. CXCVIII.)

HAB. On trees in dense forests, *Gunn.* Springs, Mount Wellington, on branches of trees, alt. 2300 feet, *Oldfield, Hooker.*

Some specimens belong to my α *Flotowiana*, others to my γ *Billardieri.*—PLATE CXCVIII. Fig. 1, portion of frond and apothecia; 2, back of ditto; 3, portion of apothecium; 4, sporidia:—*all magnified.*

9. **Sticta Freycinetii** (Delise; Bab. l. c.).

HAB. On wood, among Mosses, etc.; also running over live Ferns, *Archer.* Everywhere, *all collectors.*

The specimens mostly belong to my var. β *Delisea.* Mr. Gunn finds beautiful specimens in forests of *Fagus*, at an elevation of 2000 feet.

10. **Sticta granulata** (Bab. l. c.).—(TAB. CXCVII.)

HAB. Cheshunt, fertile, *Archer.* Collected also by *Hooker* and *Gunn,* but their specimens are barren.

This plant occurs also in Java, according to my learned friends Drs. Montagne and Van der Bosch.—PLATE CXCVII. Fig. 1, specimen, with apothecia, *nat. size;* 2, the same magnified; 3, sporidia; 4, back of thallus, showing cyphellæ, *magnified.*

11. **Sticta fuliginosa** (Ach. Meth. Lich. p. 280; Bab. l. c.).

HAB. Cheshunt, on wood, barren, *Archer.*

Apparently rare in the southern hemisphere.

12. **Sticta cetrarioides** (Bab.); thallo submembranaceo substellato dichotome ramoso canaliculato sublacunoso, ramis ascendentibus dichotomis marginibus rotundatis erosis, supra glaucescente ochroleuco glaberrimo, subtus fusco subspongioso fibrillis atris longioribus, cyphellis excavatis albidis, apotheciis . . . —(TAB. CXCIX. *B.*)

HAB. On the ground; the collector's name not mentioned. Barren.

A very remarkable plant, perfectly different from every other *Sticta*, and like nothing with which I am acquainted, except *Cetraria cucullata*, Ach., to which in general appearance it is very similar. Some states of *Sphærophoron australe*, Laur., are not unlike it at first sight, insomuch that Dr. Taylor hastily passed it over as a form of that species. The cyphellæ are formed by the ruptures of the under surface, which leave roundish, white, excavated spots.—PLATE CXCIX. *B.* Fig. 1, portion of thallus, *magnified.*

Gen. VII. RICASOLIA, *De Not.*

1. **Ricasolia herbacea?** (De N.; Nyl. Enum. p. 103).—Sticta *vel* Parmelia herbacea, *Auctt.; Bab. l. c. p.* 284.

HAB. Tasmania, *Gunn.*

A single specimen, barren, in bad condition, but belonging apparently to this species, or at any rate allied to it; perhaps it may be *R. crenulata.*

Gen. VIII. PARMELIA.

§ 1. IMBRICARIA, Fries.

1. **Parmelia perlata** (Ach. Syn. p. 197; Bab. l. c. p. 284).—P. perlata *et* P. reticulata, *Tayl.!*

HAB. Earth-banks, among Mosses; also on trees; *various collectors.*

Dr. Taylor has referred some specimens to his *P. perlata,* others to his *P. reticulata.*

2. **Parmelia saxatilis** (Ach. Syn. Lich. p. 203; Bab. l. c. p. 285).—P. tenuirima, *Tayl.! Lich. Antarct. n.* 71. P. sulcata, *ejusd. n.* 68.

HAB. Among Moss, on Fagus-trunks, elev. 2000 feet; also on granite rocks, Launceston, *Gunn.* Collected also by *Hooker, etc.* Fertile.

Some of Mr. Gunn's specimens are very fine, but are certainly only a form of *P. saxatilis,* Ach., *i. e.* of *P. sulcata,* Tayl.! Other specimens are more like the ordinary state of the plant, and are named *P. sulcata* by Dr. Taylor himself.

3. **Parmelia physodes** (Ach. Syn. Lich. p. 218; Bab. l. c. p. 286).

Var. *β. enteromorpha,* Tuck. Syn. N. Amer. Lich. p. 28.—P. enteromorpha, *Ach. et Auctt.*

HAB. On trees, etc., fertile, *Gunn, Archer.*

Both the Acharian species occur, and that under various forms, some of which simulate the appearance of *Evernia prunastri.*

4. **Parmelia diatrypa** (Ach. Syn. Lich. p. 219; Bab. l. c. p. 286).

HAB. On trunks of trees, *Gunn* (on *Fagus*). Cheshunt, *Archer, etc.* Fertile.

5. **Parmelia tiliacea?** (Ach. Syn. Lich. p. 199; Bab. l. c. p. 285).

HAB. On trees: Cheshunt, *Archer.*

Rather different from the European form, but substantially agreeing (as it appears to me) with Tuckerm. Lich. Am. Exs. n. 70. Dr. Hooker appears to have found the same plant on Mount Wellington.

6. **Parmelia placorodioides** (Nyl.! Enum. p. 104).

HAB. On rails, "very common," *Oldfield.* But very few specimens have been collected.

The specimens are named by Dr. Nylander. A perplexing species, almost intermediate between *P. tiliacea* and *P. physodes.* The habit is that of *P. tiliacea,* but the structure of the thallus more resembles that of *P. physodes.* We know not whether Dr. Nylander has described the species. *P. placorodia,* Ach., Tuckermann! Lich. Am. Exs. n. 71, is also extremely near to it.

7. **Parmelia olivacea** (Ach. Syn. Lich. p. 200; Bab. l. c. p. 286).

HAB. Rocks: Richmond, *Oldfield.* Collected also by *Hooker.*

8. **Parmelia conspersa** (Ach. Syn. Lich. p. 209; Bab. l. c. p. 286).—P. Tasmanica, *Tayl.! Lich. Ant. n.* 70.

HAB. Rocks: also on dead timber; apparently common, *Gunn, Hooker, Archer, Oldfield.*

See my remarks on this species in the 'Flora of New Zealand.'

9. **Parmelia moniliformis** (Bab. l. c. p. 288. t. 127; Nyl. Enum. p. 104).

HAB. Dry rocks: Grass-tree Hill, *Hooker,* barren. Cheshunt, on wood, *Archer,* barren. Very sparingly collected.

A rare and little-known species, rightly placed by Nylander under the "stirps *P. colpodis.*"

10. **Parmelia caperata** (Ach.; Fries, Lich. Eur. p. 69).

HAB. Trees, rotten wood, and stones, *various collectors.* Fertile.

Almost a cosmopolitan, as it would appear from Dr. Nylander's enumeration and our own herbarium, but not included in the 'Flora of New Zealand.' This is the *P. rutidota,* Tayl.! Lich. Ant. n. 72, which differs in no respect from the European form, except that the thallus is thicker than usual (resulting from exposure?) and nigropunctate

(the points being abortive apothecia). Consequently Fries's remark, "Nec unquam nigro-punctata visa," must be cancelled.

11. **Parmelia parietina** (Ach. Syn. Lich. p. 200; Bab. l. c. p. 287).

HAB. Rocks, trees, also on stems of *Salicorniæ, Gunn.* Pittwater, *Oldfield.* Cheshunt, *Archer.*

Specimens normal and fertile.

12. **Parmelia chrysophthalma** (Ach. Meth. Lich. p. 267).—P. spinosa, *Tayl.! Lich. Ant. n.* 69.

HAB. Greenstone rocks, close to the sea: Georgetown, *Gunn.*

§ 2. ZEORA, Fries, Syst. Orb. Veg. (*Psoroma* et *Pannaria*, etc., Nyl. Enum. Gen. des Lich.)

13. **Parmelia sphinctrina** (Mont.!).—P. rubiginosa, β sphinctrina, *Hook. fil. Fl. Antarct. p.* 533. *Bab. l. c. p.* 289.

HAB. On wood, apparently common. Collected by *Hooker, Gunn,* and *Archer, etc.*

A perplexing plant, and variously regarded by different botanists.

14. **Parmelia imbricata** (Nyl.! Enum. p. 109, sub *Pannaria*).

HAB. On Mosses, *Hooker.*

A pretty species, placed next to *P. pholidota*, Mont., by Dr. Nylander, whose specific character we have not seen. It seems to us closely allied to *P. Femsjonensis*, Fries, judging from the description.

15. **Parmelia triptophylla** (Fries; Bab. l. c. p. 290).

HAB. On bark, fertile, *Gunn.* Cheshunt, *Archer,* barren.

Agreeing with the form called *L. microphyllus,* E. Bot. t. 2128.

16. **Parmelia pholidota** (Mont.!; Bab. l. c. p. 290).

HAB. On wood, *Archer, etc.*

17. **Parmelia nigrocincta** (Mont.!; Bab. l. c. p. 290).

HAB. On wood, probably collected by *Hooker.*

§ 3. PLACODIUM.

18. **Parmelia splachnirima** (Tayl.!); "thallo utrinque albido glabro sinuato-lobato, lobis rotundatis crenatis marginibus adscendentibus, gemmis marginalibus plano-granulatis statim in thallum expandentibus, apotheciis centralibus planiusculis, disco carnèo albo-pruinoso margine tenui undulato."—Tayl. Lich. Antarct. n. 73.—(TAB. CXCIX. *C.*)

HAB. On the ground. Collected by *Gunn.*

Allied to *P. lentigera,* Ach., more nearly than to any other with which we are acquainted, but evidently distinct. The thallus is more deeply divided, less distinctly orbicular, of a slightly pink hue, having the margins of the same colour as the upper surface. Apothecia densely pruinose, not becoming convex in age, as in *P. lentigera.* This species might perhaps more appropriately be referred to *Biatora,* which comes extremely near to *Placodium.*—PLATE CXCIX. *C.*

19. **Parmelia rugulosa** (Nyl.! Enum. p. 111, *Placodium*).

HAB. Southport, on stone, *Ch. Stuart.*

Very near to *Parmelia elegans,* Ach., from which we should hardly have distinguished it. It is described in Dr. Nylander's 'Lichens of Chili,' p. 193. The singular rugose appearance of the thallus and backs of the apothecia, by which it principally differs from *P. elegans,* may possibly be due to some accidental circumstance.

20. **Parmelia fulgens?** (Ach.; Bab. l. c. p. 291).
HAB. On the ground: Cheshunt, *Archer*. Barren.

Specimens very minute, growing over some other barren, glaucous Lichens, not a quarter of an inch in diameter, more deeply coloured than *P. fulgens* usually is, almost orange-coloured, thick, margins of the thallus paler; the centre almost ferruginous, and simulating the appearance of confluent immarginate apothecia. Very probably this is something different from *P. fulgens*, but being barren it cannot well be proposed as new. Several allied species are mentioned by Nylander (Enum. Gen. Lich.), to one of which it may possibly belong.

§ 4. PLACODIUM, Fries.

21. **Parmelia gelida** (Ach.; Fl. N. Zeal. ii. p. 291).
HAB. Cheshunt, *Archer, Fries.*

§ 5. PATELLARIA, Fries.

22. **Parmelia pallescens** (Fries; Fl. N. Zeal. ii. p. 292).
HAB. Cheshunt, *Archer.*

23. **Parmelia subfusca** (Ach.; Fl. N. Zeal. ii. p. 292).
HAB. Cheshunt, *Archer.*

§ 6. URCEOLARIA, Fries.

24. **Parmelia scruposa** (Fries; Fl. N. Zeal. ii. 293).
HAB. Cheshunt, *Archer.*

25. **Parmelia sordida** (Nyl. En. Gen. Lich.)—Urceolaria sordida, *Fries, Lich. Europ. p.* 178. Lecanora glaucoma, *Engl. Bot. t.* 2156.
HAB. Granite rocks, St. Patrick's River, *Gunn.*

Gen. IX. THELOTREMA, *Ach.*

1. **Thelotrema lepadinum** (Ach.; Fl. N. Zeal. ii. p. 294).
HAB. Abundant on bark, etc., *Gunn*, etc.

Gen. X. GYALECTA, *Ach.*

1. **Gyalecta cupularis** (Schær.; Fl. N. Zeal. ii. p. 294).
HAB. On dead wood, Cheshunt, *Archer.*

TRIBE II. *LECIDINEÆ.*

Gen. XI. STEREOCAULON, *Ach.*

1. **Stereocaulon ramulosum** (Ach.; Bab. l. c. p. 294).
HAB. Apparently common everywhere, on rocks, in Fagus forests, *Gunn*, and *other collectors.*

2. **Stereocaulon corallinum** (Fries; Hook. fil. Fl. Ant. p. 528).
HAB. Among Moss and Lichens, on rocks, St. Patrick's River, *Gunn.*

3. **Stereocaulon denudatum** (Flörke; Bab. l. c. p. 295).
HAB. On stones, Cheshunt, *Archer.*

4. **Stereocaulon gracilescens** (Nyl. Enum. Gen. Lich. p. 97).
HAB. Granite rocks, St. Patrick's River, *Gunn.*

Gen. XII. CLADONIA, *Hoffm.*

1. Granulosæ, Fries.

1. **Cladonia retipora** (Flörke; Bab. l. c. p. 295).

Hab. Apparently abundant, Asbestos Hills, Western Mountains, etc., *all collectors.*

2. **Cladonia aggregata** (Eschw.; Bab. l. c. p. 295).

Hab. Abundant everywhere, and very variable in size and hue: very fine in wet places, *all collectors.*

3. **Cladonia rangiferina** (Hoffm.; Bab. l. c. p. 296).

Hab. Probably abundant; collected by *Cunningham, Gunn,* etc. The following forms may be noticed:—Var. *alpestris,* Cascades, Port Arthur, *Oldfield.* Var. *sylvatica,* Asbestos Hills, *Gunn.*

2. Squamulosæ, Fries.

A. Perviæ, Fries.

4. **Cladonia squamosa** (Hoffm.; Bab. l. c. p. 296).

Hab. Growing among Mosses and *Hepaticæ,* Cheshunt, Kangaroo Bottom, etc., *Gunn, Hooker, Oldfield, Lyall.*

Mr. Archer has gathered at Cheshunt a form of this species (as it seems) known as *C. delicata,* Auctt.

Dr. Hooker's specimens are very long, flexuous, and decurved, without apothecia. Dr. Taylor considers them to be a new species, which he calls *C. decurva* in Herb. Hook.

5. **Cladonia capitellata** (Bab. l. c. p. 296. t. cxxx.).

Hab. St. Patrick's.

This is erroneously referred by Dr. Nylander, in his Enum. Gén. des Lich. p. 95, to *C. amaurocræa,* which it completely resembles indeed at first sight, but differs from it essentially in the perforated axils.

6. **Cladonia furcata** (Hoffm.; Bab. l. c. p. 296).

Hab. Mount Wellington, *Oldfield.* Collected also by *Lawrence* and *Gunn.* (Various forms.)

B. Scyphophoreæ, Ach.

* *Apothecia brown.*

7. **Cladonia pyxidata** (Hoffm.; Bab. l. c. 297).

Hab. On the ground, among Mosses, *Gunn, Oldfield.*

8. **Cladonia verticillata** (Flörke; Bab. l. c. p. 297).

Hab. Woods of Mount Wellington, *Hooker.*

9. **Cladonia degenerans** (Flörke; Bab. l. c. p. 297).

Hab. Cheshunt, *Archer.*

10. **Cladonia fimbriata** (Fries; Bab. l. c. p. 297).

Hab. On the ground, Asbestos Hills, *Gunn.* Among Moss, Mount Wellington, *Oldfield:* both the normal form and the var. *longipes,* Auctt. Southport, *Stuart* (vars. *cornuta,* Ach., and *conisocræa*).

11. **Cladonia decorticata?** (Flörke; Bab. l. c. p. 298).

Hab. Mount Wellington, *Oldfield.*

** *Apothecia scarlet.*

12. **Cladonia cornucopioides** (Fries; Bab. l. c. p. 298).

HAB. Asbestos Hills, *Gunn.* Mount Wellington, *Oldfield.* Collected also by *Lawrence.*

13. **Cladonia macilenta** (Hoffm.; Bab. l. c. p. 298).

HAB. Rotten wood, Cheshunt, *Archer* (normal). Rotten trunks, Brown's River, *Oldfield.*

Dr. Nylander refers the imperfect specimens of Mr. Oldfield to var. *seductrix*, Del.

14. **Cladonia deformis** (Hoffm.; Fries, Lich. Eur. p. 239).

HAB. On the ground, *Oldfield.*

See my remarks on the geographical distribution, l. c. p. 198.

15. **Cladonia digitata** (Hoffm.; Bab. l. c. p. 298).

HAB. On rotten wood, Cheshunt, *Archer.*

16. **Cladonia Florkeana** (Fries; Bab. l. c. p. 298).

HAB. On rotten wood, Falls of the Meander, Western Mountains, *Archer.*

It is possible that this enumeration may not be quite perfect, as there are many specimens which I cannot name satisfactorily. The species of *Cladonia* which occur in Tasmania have been found also in New Zealand, *C. deformis* excepted; and only one species, *C. gracilis* (considered by many not to be specifically different from *C. verticillata*), occurs in New Zealand which has not been found in Tasmania.

Gen. XIII. BÆOMYCES, *Pers.*

1. **Bæomyces heteromorphus** (Nyl.); thallus tenuissimus cinereo-glaucescens vel albidus opacus effusus; apothecia pallide carneo-rufa sat parva (altit. circa 2 millim.) stipite crassulo (exsiccato varie compresso vel plicato) supra epithecium exhibentia planum nonnihil fuscescens (0,5–0,9 millim. latum) a stipite persistenter marginatum, margine sæpe flexuoso et parum prominulo; sporæ 8-næ oblongæ incolores simplices, longit. 0,009 millim., crassit. 0,004 millim., paraphyses graciles. Gelatina hymenea iodo non tincta.—*Nylander, MSS.* (TAB. CC. *B.*)

HAB. Clay soil, *Oldfield, Gunn.* On siliceous clay, Cheshunt, *Archer.*

PLATE CC. *B.* Fig. 1, podetium and portion of thallus; 2, section of apothecium; 3, ascus, spores, and paraphyses:—*all magnified.*

2. **Bæomyces roseus** (Pers.; Bab. Fl. N. Zeal. ii. p. 298).

HAB. On siliceous clay, Cheshunt, *Archer.*

3. **Bæomyces splachnirima** (Mitten).—Parmelia, *Tayl. Lich. Antarct. n.* 73; *et hujus operis, p.* 348; "thallo utrinque albido glabro sinuato-lobato, lobis rotundatis crenatis marginibus adscendentibus, gemmis marginalibus plano-granulatis statim in thallum expandentibus, apotheciis centralibus planiusculis disco carneo albo-pruinoso margine tenui undulato." *Tayl. l. c.*—B. squamarioides, *Nylander, MSS.* (TAB. CXCIX. *C.*)

HAB. On the ground, amongst *Hepaticæ, Gunn, Stuart.*

A pretty species, with an almost white, thin, foliaceous thallus, which might well be mistaken for a *Parmelia.* It is thus characterized by Dr. Nylander:—"Thallus albo- vel albido-glaucescens subopacus squamosus, squamis constitutus mediocribus vel majusculis difformibus (latit. circa 5 millim.) lobatis vel lobato-incisis, sat planis vel nonnihil medio depressis, interdum subimbricatis, subtus concolor vel magis albescens, adfixus (rhizinis tamen non evidentibus); apothecia lurida vel pallide lurida opaca mediocria (latit. 2–3 millim.) prominula sessilia biatorina

plana, margine crassiusculo deplanato-evanescente; sporæ 8-næ oblongæ vel fusiformi-oblongæ 1-septatæ, longit. 0,014–17 millim., crassit. 0,0035–0,0045 millim., paraphyses graciles. Gelatina hymenea iodo dilute cærulescens. Facies est *Squamariæ* cujusdam ex stirpe *Squamariæ crassæ*. Thallus plagulas latit. circa pollicaris afferens gonidia continet majuscula sphærica chlorophyllo flavo insignia. Squamæ sat tenues." I have not, however, observed that the spores are 1-septate, or that there are more than five in each ascus. It is included under *Parmelia*, at p. 348 of this volume.—PLATE CXCIX. *C.* Fig. 1, portion of thallus, with apothecia; 2, section of apothecium; 3, ascus, with spores and paraphyses:—*all magnified.*

Gen. XIV. BIATORA, *Fries.*

1. **Biatora marginiflexa** (Bab. Fl. N. Zeal. ii. p. 299).
HAB. On trees, Circular Head, *Gunn.* Cheshunt, *Archer.*

2. **Biatora cinnabarina** (Fries, Fl. N. Zeal. ii. p. 300. t. cxxix. *c.*)
HAB. On trees, *Oldfield.*

Gen. XV. LECIDEA, *Ach.*

1. **Lecidea leptocarpa** (Nyl. En. Gen. Lich. p. 125). (TAB. CC. *C.*)
HAB. Granite rocks, St. Patrick's River, *Gunn.*

PLATE CC. *C.* Fig. 1, portion of thallus, with apothecia; 2, section of apothecium:—*both magnified.*

2. **Lecidea petræa** (Flotow).
HAB. With the former.

3. **Lecidea petræoides** (Nyl. En. Gen. p. 125). (TAB. CC. *D.*)
HAB. With the former.

PLATE CC. *D.* Fig. 1, portion of thallus, with apothecia; 2, section of apothecium and thallus:—*magnified.*

4. **Lecidea atro-alba** (Ach.; Fl. N. Zeal. ii. p. 301).
HAB. With the former.

5. **Lecidea lutea** (Borr.; Hook. Brit. Fl. ii. p. 185).—L. Melizea, *Ach. Syn. p.* 47.
HAB. On dead fern-stems, *Archer.*

6. **Lecidea Stuartii** (Hampe; Nyl. En. Gen. p. 126).
HAB. Tasmania, *Stuart.*

SUBORDER II. ANGIOCARPI.

Gen. XVI. SPHÆROPHORON, *Pers.*

1. **Sphærophoron tenerum** (Laur.!; Bab. l. c. p. 304).
HAB. Cheshunt, *Archer.* St. Patrick's River (on Fagus), *Gunn.*

2. **Sphærophoron australe** (Laur.!; Bab. l. c. p. 304).
HAB. Cheshunt, *Archer.* In Fagus forests, on the trunks, *Gunn.*

Some specimens belong to *S. insigne*, Laur.!, which appears to be clearly a form of this species.

3. **Sphærophoron compressum** (Ach.; Bab. l. c. p. 305).
HAB. In Fagus forests, *Gunn.*

Probably, as Dr. Nylander suggests, a form of the foregoing.

4. **Sphærophoron coralloides** (Pers.; Bab. l. c. p. 304).
HAB. Cheshunt, *Archer.*

Gen. XVII. ENDOCARPON, *Ach.*

1. **Endocarpon? fragile** (Tayl.!); "thallo cartilagineo lobato rufescente-cinereo subtus pallidiore, lobis imbricatis erectiusculis planis oblongis angulatis subforaminulosis gemmis granulatis marginalibus."—*Tayl.! Lich. Antarct. n.* 30; *Nyland. Enum. Gen. Lich. p.* 135.

HAB. On the ground, among Mosses, *Gunn.*

"Patches 1–2 inches wide, scarcely ½ inch high. The fronds, rising from a narrow base, are crowded, plicato-convolute or imbricated, umber-coloured, . . . in the dry state very fragile. Sometimes large openings may be observed in the buds, apparently arising from the union of expanding buds."—*Tayl.! l. c.* The plant being barren, its genus, as Dr. Nylander justly observes, is doubtful.

SUBORDER III. BYSSACEÆ.

TRIBE I. *COLLEMACEÆ.*

Gen. XVIII. PYRENOPSIS, *Nyl.*

1. **Pyrenopsis Tasmanica** (Nyl. in Hb. Hook.; Syn. Lich. p. 97). (TAB. CC. *E.*)

HAB. Granite rocks, St. Patrick's River, *Gunn.*

A full description may be seen in the work above cited.—PLATE CC. *E.* Fig. 1, portion of fertile state; 2, section of apothecium:—*both magnified.*

Gen. XIX. COLLEMA, *Ach.*

1. **Collema thysanæum** (Ach. Lich. Univ. p. 653; Moug. et Nestl.! n. 453).

HAB. On bark, Cheshunt, *Archer.*

The specimen agrees with Mougeot's very well.

2. **Collema nigrescens,** var. *leucocarpum* (Bab. l. c. p. 308).

HAB. On bark, Circular Head, *Gunn.*

3. **Collema flaccidum** (Ach.; Bab. l. c. p. 309).

HAB. On bark, Cheshunt, *Archer.*

Mr. Archer has found at Cheshunt a species of *Collema* different from any of those described above, but has unluckily preserved only one specimen. It is unknown to us, and may be new. The dull-green thallus grows among Mosses, has membranous rounded lobes, in a young state resembling *C. crispum,* Schær.! Exs. n. 425 (*C. cheileum,* Ach., according to Nylander, Syn. Lich. p. 111), but afterwards expanding into a larger frond, which is much sinuated, and tomentose beneath with rather shaggy down, as in *C. saturninum,* Auctt. (to which, however, this cannot belong, not being a *Leptogium*), and then resembling a young frond of *Sticta fuliginosa.*—Apothecia plano-concave, dull-red, fringed with the minute crenated thallod at margin, then convex, emarginate.

Gen. XX. LEPTOGIUM, *Fries.*

1. **Leptogium tremelloides** (Fries; Bab. l. c. p. 308; Nyl. Syn. Lich. pp. 124, 125).

HAB. On bark, Chestnut, *Archer.*

The specimens belong to the more brightly coloured form, called by authors *Leptogium* (or *Collema*) *azureum.*

TRIBE II. *CŒNOGONIEÆ.*

Gen. XXI. CŒNOGONIUM, *Ehr.*

1. **Cœnogonium Linkii** (Ehr. Bab. l. c. p. 310).

HAB. On bark, in dense forests, *Gunn.* Cheshunt, *Archer.*

Genus incertæ sedis.

Gen. XXII. ABROTHALLUS, *De Notaris.*

1. **Abrothallus Smithii** (Tulasne, Ann. des Sc. Nat. 1852, p. 112); apotheciis hemisphæricis nigris interdum virescenti-pruinosis, ascis sub-8-sporis, sporis pallide olivaceo-brunneis oblongis obtusis uni-septatis plerumque unum apicem versus incrassatis. (Tab. CC. *F.*)

Hab. On *Parmelia perlata*, Ach., Cheshunt, *Archer*.

This curious plant, with no thallus of its own, occurs in a parasitical manner on the thalli of several species of *Parmelia*, and on some other Lichens having a thallus of a similar substance. In the south of England it is not uncommonly met with on *Parmelia perlata* and on *P. sulcata*, Taylor, usually considered a tree-state of *P. saxatilis*, Ach. The apothecia are prominent, and resemble those of some small *Lecidiæ*, black on the surface, paler within; the spores in Mr. Archer's specimens are about $\frac{1}{1500}$ of an inch in length, and $\frac{1}{5000}$ or more wide. The position of this genus is somewhat obscure; in its mode of growth and want of thallus it is allied to some small erumpent Fungi, and to this family it is referred by Nylander; on the other hand De Notaris, Tulasne, and Lindsay, place it amongst the Lichens, to which it has certainly equal claims. The species was originally figured in 'English Botany,' t. 1866, as *Lichen parasiticus*. A monograph of the genus by Dr. Lauder Lindsay, with very careful figures, was read before the British Association in August, 1856.—Plate CC. *F.* Fig. 1, vertical section of apothecium; 2, ascus, paraphysis, and ascus containing spores; 3, spores:—*all magnified.*

ADDITIONS, CORRECTIONS, &c.

VOLUME I.

(Page 3.) *Clematis blanda* and *C. gentianoides* are referred by Dr. Mueller to *C. coriacea*, DC., in which Mr. Archer agrees.

(Page 4.) Clematis *linearifolia*, Steud.

I have referred this doubtfully to *C. microphylla*, DC. Dr. Mueller confirms this, and the older name of De Candolle should therefore be adopted.

(Page 7.) *Ranunculus scapigerus*, Hook., is referred by Mueller to *R. plebejus*, Br., an Australian and New Zealand plant.

(Pages 8 and 9.) *Ranunculus inundatus*, Br., and *R. glabrifolius*, Br., are both referred by Mueller to the New Zealand *R. rivularis*, Banks et Sol. Archer considers that *R. cuneatus*, Hook., is a variety of *nanus*, Hook., and *R. inconspicuus*, Hook. fil., of *R. glabrifolius*, Hook.

(Page 10.) *Ranunculus Pumilio*, Br., is considered by Mueller and Archer to be a variety of *R. sessiliflorus*, Br., and no doubt rightly.

(Page 10.) Add—

Gen. IV. CALTHA, *L.*

Sepala 5, petaloidea, colorata. *Petala* 0. *Stamina* numerosa, rarius definita. *Ovaria* 5–10, multiovulata.—Herbæ; foliis *radicalibus, scarioso-stipulatis;* pedunculis 1-*floris.*

A genus of the north and south temperate and colder zones; more rare on the mountains of intervening latitudes. Several species are found in Fuegia, and one on the mountains of New Zealand, which so closely resembles the Tasmanian species that I doubt their proving distinct.—*Caltha* is readily distinguished as a genus by its 5–8-petaloid imbricating sepals, absence of petals or glands, and many-seeded carpels. (Name from *καλαθος*, *a cup*, in allusion to the form of the flower of the European species.)

1. Caltha *introloba* (Muell. Fragm. Phyt. Aust.); parvula, foliis longe petiolatis late oblongis integerrimis v. obtuse sinuatis apice obtusis emarginatisve, appendicibus basi sursum inflexis laminæ adnatis, scapo brevi crasso, sepalis 5–8 linearibus, staminibus 10, carpellis sub-7 (-5–9) 3–5-spermis.

Hab. Western Mountains, *Archer*.

Distr. Alps of Victoria, *Mueller*.

A small, tufted, fleshy or thick subcoriaceous herb. *Rhizome*, with thick fibres, descending. *Leaves* all springing from the crown of the rhizome, 2–3 inches long, spreading; *petioles* thick, with broad membranaceous sheathing stipules; *lamina* coriaceous, ½ inch long; inflexed lobes at the base sometimes wanting in Victoria specimens according to Mueller, sometimes with a lobule at their base externally. *Scape* very short, sessile among the leaves,

stout, channelled. *Flower* about $\frac{1}{3}$ inch across. *Petals* apparently yellow (white according to Mueller), revolute. *Stamens* 10 in the only two flowers examined. *Ovaries* erect. *Carpels* (ripe) flattened, with a very slightly recurved beak.—I doubt this proving distinct from *C. Novæ-Zelandiæ*, Hook. fil., from which it differs in the few (10) stamens of the only two perfect flowers I possess, more erect pistils, and longer more adnate inflexed lobes. The foliage, habit, and flower otherwise appear identical. Mueller places most reliance on the colour of the flower, white in this, yellow in the New Zealand plant; but this is a variable character in the northern *C. palustris*.

(Page 21.) Barbarea *australis*, Hook. fil.

Mueller considers this the same with the European *B. vulgaris*, L., and I am disposed to agree with him.

(Page 22.) Hutchinsia *procumbens*, Br.

The cotyledons are incumbent in this plant, as correctly represented in the 'Icones Plantarum,' and as in European specimens.

(Page 24.) Draba *Pumilio* (Br. in DC. Syst. ii. p. 353); "scapis nudis 1-floris, foliis radicalibus ovatis integris petiolatis, siliculis ovatis."

HAB. Tasmania, *Brown*.

I know nothing of this plant, which is further thus described by De Candolle:—"A very small glabrous *herb*. *Root* perpendicular, simple, very slender. *Radical leaves* ovate or oval, entire, long-petioled, with the petiole 4 lin. long. *Scapes* many, radical, naked, one-flowered, 2–3 lines long. *Flowers* minute, white. *Calyx* spreading. *Petals* entire? *Silicula* ovate; stigma capitate, subpedicellate."

(Page 25.) 3. Lepidium *foliosum* (Desv. Journ. iii. pp. 164, 180); "siliculis ovali-rhombeis emarginatis, stylo subexserto, foliis oblongis obtusis ad apicem grosse dentatis confertis."—*DC. Syst.* ii. *p.* 546.

HAB. D'Entrecasteaux Channel (*fid. DC.*). Abundant on the islands off the south-east coast, never on the main, nor even on Bruni Island, *Oldfield* (*fid. Mueller*).

I do not know this species, which is thus described by De Candolle:—"*Stem* herbaceous, annual?, robust, erect, branching, branches densely leafy. *Leaves* glabrous, subfleshy, oblong, obtuse, serrate at the apex with sharp deep teeth, 3 lines broad, the upper three-toothed at the apex. *Pedicels* subangled, 3 lines long, approximate, obliquely erect. *Siliques* 2 lines long, almost $\frac{1}{2}$ a line broad, oval-rhomboid, emarginate, valves keeled, stigma subexserted; *seeds* red, thickish.—Differs from *L. Piscidium* in the siliques being almost twice as large."

I have seen two specimens of what may after all be Desvaux's plant, one marked *L. foliosum* by Mueller, gathered at Southport, Tasmania; the other collected in Victoria by Harvey. These agree with the description given above, except in the siliques being smaller than in *L. Piscidium*, of which I expect my plant (probably Desvaux's) is a variety. It differs from *L. cuneifolium* in the acute leaves.

(Page 26.) Viola *hederacea*, Lab.

Mueller considers this to be very distinct from *V. Sieberi*, but after another careful examination with Mr. Archer of Sieber's original specimens and of those figured in the 'Flora Exotica,' together with a very fine suite of forms (collected by Mr. Archer), we are unable to find any characters that would make of it even a permanent variety. I have not seen Mueller's specimens.

There is, however, a plant which I have regarded as a form of *V. hederacea*, with minute flowers and very short pedicels (very analogous to the fertile forms of some European species) which Mr. Archer thinks may prove distinct; it has a more tufted habit, is smaller in all its parts, has the very short peduncles about half the length of the leaves; the flowers only 2–5 lines in diameter, and generally violet; the petals recurved and but little longer than the sepals. This bears fertile anthers and also produces seed abundantly, identical with the seed of the commoner form of *V. hederacea*, which, however, also ripens its capsules and seeds. This is either a distinct species or

is a more fertile reduced state of *V. hederacea*, with which it agrees so closely in foliage that small specimens of *hederacea* can with difficulty be distinguished from it except by the above characters and its solitary, non-stoloniferous habit. The small, more fertile, and short-pedicelled flowers of the European species occur, I believe, on the same plant with the larger, less fertile, long-pedicelled flowers; and if the Tasmanian *Viola hederacea* presents analogous differences in its flowers to the European, it is the more remarkable case, for its small and large flowers are always on different plants.

Mr. Gunn, who sends the small form from granite soil, St. Patrick's River, elevation 2000 feet, believes that it is not a distinct species, though it grows singly and does not form the large masses that *V. hederacea* does in its usual form. Archer, who does consider it distinct, collected it at Cheshunt and on the Western Mountains. I have it also from Victoria, collected by Robertson.

3. Viola *Cunninghamii, β radicata* (Hook. fil. Flor. N. Zeal. i. p. 16); cæspitosa, vix stolonifera, glaberrima; foliis late ovatis obtusissimis crenatis basi subcordatis, petiolo apice dilatato, stipulis lanceolato-subulatis remote dentatis, bracteolis parvis, sepalis oblongo-lanceolatis, petalis subspathulatis lateralibus obscure barbatis postico emarginato, calcare brevi.

HAB. Western Mountains, by rivulets, on Cuming's Head, *Archer*.—(Fl. Dec.)

DISTRIB. Mountains of New Zealand.

This resembles a good deal the small plant I have just described under *V. hederacea*, especially in habit, but is more tufted, has the leaves longer in proportion to their breadth, less rounded or reniform, and has not the waved tooth-margins of *V. hederacea*, but distinct, broad crenatures; the long stout peduncle, broader sepals, and scarcely bearded petals further distinguish it well.—Whole plant glabrous, 2–4 inches high. *Rhizome* slender, perpendicular or creeping. *Stems* extremely short; stolones none. *Leaves* pale-green, ½–1 inch long, ovate, with rounded apices and crenate margins, always longer than broad, sometimes cordate at the base, never deeply as in *V. Caleyana*, nor with the broad shallow sinus of *V. hederacea*. *Flowers* pale, ⅓–⅔ inch across. *Sepals* broader and shorter than in *V. hederacea;* the petals very similar to those of that plant, as are the capsules and seeds.

4. Viola *Caleyana* (Don, Syst. Gard. i. p. 329); caulescens v. stolonifera, glaberrima; foliis profunde cordatis obtusis crenato-serratis, stipulis bracteolisque foliaceis oblongis obtusiusculis, sepalis falcato-lanceolatis acuminatis, petalis glabris postico apice bilobo lateralibus glabris oblongo-spathulatis, calcare brevi late saccato.

HAB. Deloraine, *Archer*.

DISTR. New South Wales. Illawarra, *Backhouse*. Victoria, *Mueller*.

A very variable species, quite distinct from any of the former, and easily recognized by the larger stipules and bracteoles, deeply cordate leaf, and bilobed spurred petal.—*Rhizome* short, very fibrous. *Stems* or *branches* 1–10 inches long, tufted or lax and trailing. *Petioles* slender. *Leaves* ½–1½ inch long, very variable in breadth; in the Illawarra specimen the cordate bases are so laterally produced that the leaf is broadly triangular and twice as broad as long. *Peduncles* slender. *Flowers* ½–¾ inch diam. *Sepals* all produced at the base. *Lateral petals* minutely bearded. *Anthers* as in its Tasmanian congeners. *Stigma* truncate and minutely toothed. *Capsule* and seeds as in *V. hederacea*.—Don puts this in his section *Dischidium*, characterized by the bifid stigma and acaulescent habit, but describes the species as caulescent, and the stigma as unknown. I do not on the dried specimens observe the spots he describes on the stem.

(Page 27.) Hymenanthera *angustifolia*, Br., is a native of Victoria. Mueller considers it to be specifically the same with *H. dentata*, Br., of New South Wales, and *H. Banksii*, Muell. MSS. *H. angustifolia* grows in Tasmania in the same locality with *Discaria* (*Oldfield*).

(Page 35.) Tetratheca *procumbens*, Gunn, MSS.

Dr. Mueller refers this to *T. calva*, Schuckhardt, Syn. Trem., and considers my *T. Gunnii* to be a variety of the same, in which Archer agrees.

(Page 42.) Scleranthus *fascicularis*, Hook. fil.

Mueller reduces this to a variety of *S. biflorus*.

(Page 51.) Lasiopetalum *micranthum*, Hook. fil. This I take to be the *Rhynchostemon Tasmanicus*, Muell. MSS., found at Swanport by *Stuart*. At line 4 from bottom, for *acute* read *minute*.

(Page 53.) Hypericum *gramineum*, Forst.

Mueller states that this flows into *H. Japonicum*, Th.

(Page 54.) Eucryphia *Milligani*, Hook. fil., forms a tree 40 feet high, on Mount Lapeyrouse, retaining all its characters. (Mueller does not consider it a good species, and Archer is doubtful about it.)

(Page 57.) Geranium *potentilloides*, L'Hérit.

Mueller reduces this to a variety of *G. dissectum*, L., and both he and Oldfield consider its var. β *parviflora* to be a distinct species. Archer refers both to varieties of *G. dissectum*.

Geranium *brevicaule*, Hook.

Mueller considers this quite distinct from *G. potentilloides*, and says that it inhabits loftier situations.

(Page 58.) Pelargonium *Acugnaticum*, Pet. Th.

Mueller and Archer confirm my suspicion of this being referable to *P. australe*, Willd.

(Page 59.) *Rœpera*, A. Juss., should be reduced to *Zygophyllum* (Mueller).

(Page 64.) 4. Phebalium *Daviesii* (Hook. fil.); frutex erectus, lepidotus; ramis virgatis, foliis angustissimis e basi ad apicem sensim dilatatis apice bifidis margine recurvis supra glabris medio profunde sulcatis subtus argenteo-lepidotis, floribus terminalibus umbellatis, pedicellis breviusculis floribusque argenteo et ferrugineo lepidotis.

Hab. East coast, near St. Helen's Bay, *R. N. Davies, Esq.* (Herb. Archer.)

A very distinct and pretty species, easily recognized by the slender, twiggy habit, very narrow leaves dilated upwards to the bilobed apex, silvery lepidote scales of their under surface, recurved margins, and terminal umbels of flowers. It is closely allied to *P. glandulosum*, Hook. (*P. sediflorum*, Muell.), but wants the great tuberculate glands of the upper surface of the leaves. It is also near *P. eleagnifolium*, Juss., but the foliage is much smaller, narrower, and not tomentose below.—*Branches* very slender, terete, covered with ferruginous scales. *Leaves* scattered, 1 inch long, ½ line wide at the tip, glabrous and smooth above, white, with lepidote scales below, where are also occasionally a few scattered ferruginous scales. *Flowers* 6–8 in an umbel, all terminal. *Pedicels* stout, ⅓ inch long. *Flower* hemispherical, 3 lines diam. *Calyx* short, obscurely lobed. *Petals* oblong, subacute, white, with large ferruginous glands on the back towards the apex. *Filaments* slender, exserted. *Anthers* oblong, with a small apiculus. *Ovary* glabrous, 5-lobed. *Style* slender.

Phebalium? *truncatum*, Hook. fil.

The flowers are occasionally pentamerous, as represented in the Plate. Archer has given me beautiful specimens in flower and fruit, from Mount Gog. I suspect that Mueller's *Eriostemon serrulatum* (Fragment. Phyt. iv.), of which I have seen a bad specimen only, is the same as this.

Eriostemon *verrucosum* has been found in Victoria by Mueller.

Eriostemon *virgatum*, A. C., is *E. Oldfieldii*, Mueller.

(Page 66.) Archer considers that *Boronia citriodora*, Gunn, and *B. Gunnii*, Hook. fil., may possibly prove varieties of *B. pilosa*, Lab.

(Page 68.) Mueller considers that his *Boronia dentigera*, Trans. Vict. Instit. 1855, p. 32, mentioned under *B. variabilis*, is a very distinct species, having rough seeds.

(Page 69.) Discaria *australis* occurs in one spot only on Brown's River, south of Hobarton, the most southerly habitat I am acquainted with (*Oldfield*).

(Page 76.) Pomaderris *discolor*, Vent., is regarded by Archer as a variety of *P. elliptica*, Lab.

(Page 79.) Stackhousia.

In the generic character, line 2, for *longioribus* read *brevioribus;* and in the English description of the genus, at p. 80, line 1, for *longer* read *shorter.*

When I drew up the characters of the species of this genus, I had not seen the elaborate monograph of Schuckhardt, published in the Linnæa, 1853, the results of which are so different from mine that I have again attempted to settle the limits of the species of this puzzling genus.

1. Stackhousia *monogyna*, Lab., and *S. obtusa*, Lindl.

S. monogyna, according to Labillardière, should have one bract and two minute deciduous lateral ones, and his figure accords well with Lindley's t. 1916 in most respects. Lindley further describes the bracts as very short, shorter than the calyx, and membranaceous, but figures those of the lower flowers as longer than the calyx. The *S. obtusa* he distinguishes by having the bracts longer than the calyx, and the spike shorter, and cylindrical. None of these characters are constant in Gunn's specimens; and in my own, gathered near Hobarton, I find the bract varying from shorter than the calyx to half as long as the corolla. Schuckhardt gives no distinguishing characters, but describes the corolla of *S. monogyna* as flavescent (which Lindley figures white), and of *S. obtusa* as yellow (*lutea*). Archer considers them the same, and Gunn also observes that he found connecting specimens between *S. obtusa* and *monogyna*. The lateral bracts are evanescent in most of the Tasmanian specimens.

2. Stackhousia *Gunnii*, Hook. fil., is considered by Archer to be a variety of *S. monogyna*, and no doubt rightly so.

3. Stackhousia *maculata*, Sieb. 246.

Schuckhardt remarks that no such species exists in the Herbarium Rudolphianum, where all Sieber's plants are without exception to be found. Sieber's plant is, however (probably erroneously), named *S. maculata* in the Hookerian Herbarium, Fl. Nov. Holl., n. 246, and it is no doubt *S. spathulata*, Sieb., of Rudolph. Herb. (Schuckhardt, p. 20), *S. maritima*, Muell. MSS., *S. cuneata*, A. Cunn., *Tripterococcus spathulatus*, Mueller. This appears to be a maritime species.

4. Stackhousia *flava*, Hook. fil.

5. Stackhousia *pulvinaris* (Mueller, Fragm. Phyt.); parvula, intricatim ramosa; foliis lineari-oblongis spathulatisve obtusis, floribus solitariis ramulos terminantibus, stylo brevissimo profunde 3–4-fido.

Hab. Western Mountains, in moist places, *Archer*.

Distrib. Australian Alps, *Mueller*.

A very singular little species, scarcely 2 inches high, very different in habit and appearance from any of its congeners. Mueller observes that it forms a carpet on the summits of the Australian Alps, speckled with fragrant, starry flowers.—*Stems* much branched, slender, tufted and interwoven together. *Leaves* $\frac{1}{4}$ inch long, glabrous, rather fleshy, linear-spathulate or oblong, bright-green. *Flowers* solitary, terminal, scarcely rising above the leaves, yellow. *Stamens* nearly equal in Archer's specimens, two shorter than the others in Mueller's. *Anthers* glabrous. *Style* very short, cleft almost to the base.

Stackhousia *Gunnii*, Schlecht. in Linnæa, xx. 642, founded on Lindley's figures of *S. monogyna*, appears to have no characters at all. Schuckhardt quotes it (altering the name to *Gunniana*), but does

not allude to Lindley's figure, nor give any habitat or authority for the specimens from which his full description is drawn up. Mueller considers it a form of *S. monogyna*, together with *S. Huegelii*, Endl., and *S. obtusa*, Lindl.

Stackhousia *pubescens*, Rich., is erroneously described as Tasmanian by Schuckhardt, who assumes that Richard himself collected in the island.

Stackhousia *aspericocca*, Schuckh.

I have tropical specimens so called, of this, from Mueller (Dawson River), and from M'Gillivray (Port Curtis), in all which the lateral bracts are well developed. I have seen no Victoria specimens, but have some of the *S. monogyna* from that country with larger lateral bracts than usual; nor have I any Tasmanian specimens.

Stackhousia *Muelleri*, Schuckh. l. c. p. 16.

I do not recognize this species, which is said to have been gathered in Victoria by Mueller, and in Tasmania by Stuart. All its bracts are described as being very broad and membranous, and it may prove another form of *S. monogyna*, judging from the description only.

(Page 84.) LEGUMINOSÆ.

Oldfield remarks that this Order disappears in the country west of Recherche Bay. *Acacia stricta* there advances some few miles inland, and thence for thirty-five miles westward Oldfield did not meet with another species, though he travelled over localities of all elevations and aspects. This is an analogous fact to that of the rarity of the Order in New Zealand, Fuegia, and other humid temperate regions. (See Flora Antarctica, ii. 261.)

(Page 85.) In the generic character of *Dillwynia*, for "*vexillum* duplo longius quam latum" read "duplo latius quam longum."

(Page 86.) In the English generic character of *Pultenæa* the seeds should have been described as strophiolate (as in Tab. XIII. and in the Latin character).

(Page 88.) Pultenæa *pimeleoides*, Hook. fil., Mueller regards as the same with *P. dentata*, Lab.

(Page 89.) Pultenæa *Hibbertioides*, Hook. fil., Mueller refers to *P. mollis*, Lindl.

(Page 90.) Pultenæa *cordata*, Grah. Mueller and Archer both refer this to *P. juniperina*, Lab.

(Page 91.) Pultenæa *diffusa*, Hook. fil.

Mueller refers this to *Phyllota* (Fragment. Phyt. Austr.), in which Bentham does not concur. This is a native of Victoria.

(Page 93.) Pultenæa *Bæckioides* (A. Cunn.); "ramulis minute puberulis, foliis minimis ovatis convexis mucrone brevissimo subrecurvo vel muticis coriaceis glabris v. subtus tenuissime pubescentibus, stipulis setaceis minutis, floribus axillaribus brevissime pedicellatis, bracteis bracteolisque minutis v. subnullis, leguminibus villosis obtusis."—*Benth. in Ann. Vien. Mus.* ii. *p.* 83.

HAB. Tasmania, *A. Cunningham* (*fid. Benth.*).

DISTRIB. Victoria, *Mueller, etc.*

I have given Bentham's description of this plant, which Mueller informs me is found in Tasmania. His Victoria specimens so closely resemble the small states of *P. Gunnii β*, that I do not see how they are to be distinguished from that plant. I find what appears to be the same thing in Bentham's herbarium, marked *P. brachypoda*, Muell., from Australia Felix, and *P. cordifolia*, Hook., from Argyll, *Lhotsky*.

(Page 96.) Bossiæa *cordigera*, Benth., is perhaps *B. horizontalis*, Muell., and if so, is a native of Victoria.

(Page 97.) Goodia. For "*latifolia*" read "*lotifolia*."

Mueller and Archer both unite *G. pubescens*, Sims, with *lotifolia*, and Mueller informs me that *G.? polysperma*, DC., is a Cape *Argyrolobium*. Oldfield remarks that *G. lotifolia* has bracteoles and stipules.

(Page 100.) The genus *Swainsonia*, Salisb., was named after Mr. Isaac Swainson, an amateur horticulturist at Twickenham, and not, as stated, after the late eminent zoologist.

(Page 102.) Insert—

Gen. XVII. *bis.* HARDENBERGIA, *Benth.*

Calyx campanulatus, 5-dentatus, sub-2-labiatus. *Vexillum* orbiculatum, exappendiculatum, alas oblique obovato-oblongas superans. *Carina* alas brevior, iisdem adhærens, incurva. *Stamina* diadelpha. *Ovarium* pluri-ovulatum. *Stylus* brevis, subulatus. *Legumen* lineare, compressum, intus septis cellulosis multiloculare. *Semina* strophiolata.—Frutices *volubiles; foliis unifoliolatis v. pinnatim 3-foliolatis;* stipulis bracteis*que minutis;* pedunculis *axillaribus, multifloris;* pedicellis *ebracteatis;* calycibus *glabris.*

A small genus of extratropical Australian climbing plants, closely allied to *Kennedya* and *Leptocyamus;* differing from the former in the calyx not being so bilabiate, the vexillum longer than the alæ, and short style. (Name in honour of the Countess Hardenberg, of Vienna.)

1. Hardenbergia *ovata* (Benth. Pl. Hugel. p. 40); foliis 1-foliolatis ovatis, racemis axillaribus paucifloris.—*Benth. Ann. Vien. Mus.* ii. *p.* 124. Kennedya ovata, *Sims, Bot. Mag. t.* 2169. *DC. Prod.* ii. *p.* 384.

HAB. Rocky hills, near Frogmore, Richmond, *Oldfield.*

DISTRIB. New South Wales and Victoria. (Cultivated in England.)

Root perennial, long, woody, thicker than the finger, used as Sarsaparilla in Victoria (*Adamson*). *Stems* slender, rigid, terete, climbing, ribbed above. *Leaves* scattered, hard, coriaceous, unifoliolate, ovate, rather obtuse, 2–3 inches long, variable in breadth, strongly reticulate on both surfaces, rather glaucous below. *Stipules* oblong-lanceolate, acuminate, $1\frac{1}{2}$ lin. long. *Racemes* short, axillary, erect, shorter than the leaves, slightly hairy. *Pedicels* slender, with small, lanceolate, acuminate, deciduous bracts at the base. *Flowers* blue or white, about $\frac{1}{3}$ inch long. *Calyx* glabrous, shortly toothed. *Pod* $1\frac{1}{2}$ inch long, $\frac{1}{3}$ inch broad, flat, nearly straight, subacute at both ends. *Seeds* about 6, oblong, black, with a large white strophiolus;—(described from Australian specimens.)

(Page 102.) Under the remarks upon *Lept. Tasmanicus,* for "Mueller" read "Meisner, in Plant. Preiss. i. p. 94, in note."

(Page 114.) 2. Geum *renifolium* (Muell. in Trans. Phil. Soc. Vict. 1857); sericeo-pilosum; foliis omnibus radicalibus simplicibus reniformi-rotundatis obscure lobatis crenatis, scapis simplicibus v. bifidis 1–3-bracteatis, bracteis profunde lobatis, floribus amplis, calyce tomentoso, petalis albis, capitulis globosis, acheniis stylisque gracilibus apice uncinatis longe pilosis.

HAB. Mount Lapeyrouse, *Stuart.*

I have seen but one imperfect specimen of this fine plant, sent by Mueller. It resembles a good deal the American *G. radiatum*, Mich.—*Leaves* all radical, simple, rounded-reniform, crenate, almost villous on both surfaces, closely reticulate, about $1\frac{1}{2}$ inch across. *Scapes* stout, 6–10 inches long, with several lobed bracts. *Flowers* variable in size, $\frac{2}{3}$–$1\frac{1}{2}$ inch across. *Petals* white. *Achenia* small, not compressed, attenuated into a slender, straightish style, which is hooked at the very apex only, villous with long straight hairs.

(Page 115.) Epilobium.

Mueller considers that all the Australian species are referable to one; Archer that *E. glabellum*, Forst., is referable to *E. tetragonum*, L.

(Page 119.) Haloragis *pinnatifida*, A. Gray;—referred by Sonder (Linnæa, xii. p. 231) to Brongniart's *H. heterophylla*. Strathallan, near the Jordan, *Oldfield*.

(Page 120.) Haloragis *Gunnii*, Hook. fil.

This should bear the name of *H. teucrioides*, Schlecht.; it is also *H. elata*, Sonder, in Linnæa, xii. 230. It is further also a native of Victoria, as is *H. depressa*, Walp. Archer considers that this, *H. tetragyna*, Lab., and *H. depressa*, Hook. fil., may possibly all prove to be varieties of one species.

(Page 122.) Myriophyllum *variæfolium*, Hook. fil., is referred by Sonder to *M. verticillatum*, L. (Linnæa, xii. 233.)

(Page 124.) Add, as a doubtful member of the order,—

? Gen. V. CERATOPHYLLUM, *L.*

Flores monoici. *Perianthium* axillare, sessile, multifidum. ♂ *Antheræ* plurimæ, 2-loculares, indehiscentes. ♀ *Ovarium* 1, sessile, 1-loculare. *Ovulum* 1, pendulum, orthotropum. *Stylus* terminalis, apice hinc stigmatosus. *Nux* coriacea, sæpissime basi bi-aculeata, stylo apiculata. *Semen* pendulum. *Embryo* exalbuminosus; *cotyledonibus* 4, verticillatis; *plumula* polyphylla; *radicula* brevissima.—Herbæ *demersæ;* foliis *verticillatis, rigidulis, di-trichotome multifidis.*

A genus of submerged water-plants, found in many temperate and tropical parts of the globe. *Stems* 6–10 inches long. *Leaves* whorled, slender or almost capillary, divided into more or less elongated laciniæ, sometimes remotely toothed. *Flowers* very rarely produced (I have seen none in Tasmanian specimens), small, axillary, sessile, monœcious. *Perianth* of several small leaves, enclosing in the male flower many sessile anthers, and in the female a solitary, one-celled, one-seeded ovary, with a simple style. *Fruit* a small coriaceous nut, with usually two spines diverging downwards from towards the base below the middle, and a persistent, terminal style. (Name from κερας, *a horn*, and φυλλον, *a leaf*, in allusion to the foliage.)

1. Ceratophyllum *demersum* (Linn.; Engl. Bot. t. 947).

Hab. Still water, Launceston, *Lawrence*.

Distrib. South-eastern and tropical Australia, Asia, Africa, and America, generally.

(Page 133.) Eucalyptus *Risdoni*, Hook. fil.

Dr. Mueller reduces this to *E. cordata*, an opinion I cannot coincide in.

(Page 139.) Leptospermum *lanigerum*, Sm., and *L. flavescens*, Sm., are considered varieties of one by Archer; also *L. myrtifolium*, Sieb., and *L. rupestre*, Hook. fil.

(Page 141.) Bæckia *thymifolia*, Hook. fil., is regarded by Archer as a variety of *B. diffusa*, Sieb.

(Page 148.) Tetragonia *implexicoma*, Hook. fil.

I have good fruit of this from Archer and Mueller.—The *styles* vary from 2–3. The *flowers* are hermaphrodite, and smell of hawthorn. The *berries* spherical and red.—*F. Mueller*.

(Page 149.) Bauera *microphylla*, Sieb.

Mueller considers this to be quite a distinct species.

(Page 152.) Hydrocotyle *Tasmanica*, Hook. fil., is, according to Archer, a variety of *H. hirta*, Br.

(Page 153.) Hydrocotyle *pterocarpa*, Muell. Add to habitat—Southport, *Oldfield*.

(Page 159.) Microsciadium *Saxifraga*, Hook. fil.

I overlooked the fact that this generic name, having been preoccupied, has been replaced by *Ochotzia*, Walpers.

(Page 161.) Add—

Gen. X. *bis*. GINGIDIUM, *Forst.*

(*Anisotome*, Hook. fil. Fl. Ant. and N. Zeal.)

Dioicum v. polygamo-monoicum. *Fructus* dorso compressus, late ovato-oblongus v. elongatus, alatus. *Carpella* plano-convexa, dissimilia, rarius conformia, unico jugis 5 omnibus alatis, altero sæpius abortivo, jugis 4–5 filiformibus alatisve, valleculis grosse vittatis, semine tereti v. profunde sulcato. *Calycis* margo contractus, inæqualiter 5-dentatus. *Petala* apice inflexa. *Stylopodia* ♂ magna, depressa; *stylis* ♀ elongatis. —Herbæ *habitu variæ, erectæ, prostratæ v. subscandentes;* foliis *pinnatis v. decompositis;* umbellis *compositis;* involucris 0 *v. oligophyllis, sæpe foliosis.*

In the present state of the Umbelliferæ as regards systematic arrangement, it is impossible to define most of the European and Asiatic genera, and until the limits of these are better settled, the few Australian members of the Order cannot be definitely classified. My generic name *Anisotome* was anticipated by *Anisotoma*, Fenzl (Linnæa, xvii. 330), a genus of *Asclepiadeæ*. I have somewhat reluctantly followed Mueller in restoring Forster's name of *Gingidium*, a name of Dioscorides and Pliny, not only because it was originally applied to a totally different plant of the northern hemisphere, but because Forster's description and figure of the fruit of the New Zealand *Gingidium montanum* (*Anisotome Gingidium*, Fl. N. Zeal. i. 89) is so totally unlike any plant of the Order, that it was only after inspecting Forster's specimens when preparing the New Zealand Flora, that I found his species of *Gingidium* belonged to my genus *Anisotome*. Mueller, who first described the following and another Australian alpine species from Victoria, reduces also the New Zealand genus *Aciphylla*, Forst., to *Gingidium*.—As a genus, this may be known from its Tasmanian congeners by its diœcious habit, broad, flat, sometimes unequal, carpels, with 4–5 acute ridges on each, 5-toothed calyx, inflexed stamens, large stylopodia, and suberect styles.

1. Gingidium (§ Aciphylla) *procumbens*, Muell. (Fragment. Phyt. Aust. p. 15); pumilum, dioicum; caule procumbente ramoso-folioso, foliis coriaceis ambitu late ovatis bipinnatis, rachi rachillaque articulatis, pinnis 5–6-jugis, pinnulis paucijugis laciniatis segmentis confertis lineari-lanceolatis, pedunculis aphyllis, involucro oligophyllo partiali polyphyllo, mericarpiis subæqualibus.

Hab. Summit of Mount Lapeyrouse, *Oldfield*.

A small species, growing in tufts often a foot across. *Leaves* with the blade about 1 inch long; sheaths obtuse, membranous; pinnules 2–3 lin. long, ½ lin. broad. *Umbels* compound: male of many rays; female of few. *Fruit* 1½ lin. long.

(Page 163.) Panax *Gunnii*, Hook. fil.

Berries black, resembling those of *Ligustrum vulgare*, Oldfield.

(Page 171.) Compositæ. See additional observations at the end of the Order, p. 228.

(Page 175.) Archer regards *Eurybia lirata*, DC., and *E. Gunniana*, DC., as referable to *E. fulvida*, Cass.

(Page 181.) Eurybia *ericoides*, Nob. (non Steetz), *E. Hookeri*, Sond. (vide p. 229), was also found on Mount Wellington by Gunn.

(Page 183.) Erigeron *pappochroma*, Lab., *E. Tasmanicum*, Hook. fil., and *E. Gunnii*, Muell., may possibly prove varieties of one species.

(Page 188.) Paquerina *graminea*, Cass.

Mueller refers this to *Brachycome*, and includes under it *B. parvula*, Hook. fil. (p. 185), adding that it is found at Moreton Bay, the Murray River, and Spenser's Gulf.—(*Fragment. Phyt. p.* 49.)

(Page 189.) Lagenophora *latifolia*, Hook. fil., and *L. montana*, Hook. fil., are regarded by Archer as varieties of one.

(Page 195.)—

Gen. XI. *bis.* TRINEURON, *Hook. fil.*

Capitulum heterogamum, discoideum. *Involucrum* campanulatum, squamis 2-seratis, linearibus, coriaceis, æqualibus. *Receptaculum* angustum, papillosum, nudum. *Flosculi radii* ♀, pluriseriati, 8–10. *Corolla* tubulosa, elongata, 3–4-fida, stylo longe exserto bifido; *disci* ♂, pauci, tubo superne subcampanulato 4-fido; *staminibus* 4; *antheris* ecaudatis; *stylo* exserto, apice incrassato brevissime bifido. *Pappus* 0. *Achenium* fl. ♀ lineari- v. obovato-oblongum, 3–4-gonum, angulis incrassatis, fl. ♂ breve, stipitiforme. —Herbæ *alpinæ et Antarcticæ, cæspitosæ, glaberrimæ v. puberulæ, subcoriaceæ;* foliis *alternis, linearibus, spathulatisve;* capitulis *breve pedunculatis;* floribus *inconspicuis.*

This genus, which inhabits the Victoria Alps, the mountains of New Zealand, and Lord Auckland's Island, is very closely allied to *Abrotanella* of Fuegia, and *Scleroleima* of Tasmania.—Small, tufted herbs, often forming broad patches on the ground. *Leaves* crowded, alternate, linear or spathulate, entire. *Capitula* on terminal peduncles, or sessile amongst the uppermost leaves, oblong. *Involucre* of two series of linear, erect, coriaceous scales. *Florets* all tubular, outer female in several series, with a cylindrical, narrow, three- or four-toothed corolla; *style* thick, exserted, bifid, with rounded, glabrous apices to the lobes, and a tuberous base. *Male florets* fewer, subcampanulate above, quadrifid; *stamens* four, anthers hardly cohering, style rather incrassated at the top, obscurely two-lobed. *Achenium* with three or four thickened angles. *Pappus* none. (Name from τρεις, *three*, and νευρον, *a nerve;* in allusion to the three transparent nerves of the involucral scales.)

1. Trineuron *scapigerum* (Muell. in Trans. Phil. Soc. Vict. 1857, p. 70); erectum, puberulum; foliis lanceolatis lineari-spathulatisve acutis, capitulis confertis.

Hab. Mount Lapeyrouse, *Oldfield* and *Stuart* (Mueller).

Stems 2–4 inches high. *Leaves* puberulous, linear, spathulate or lanceolate, acute, ½–1 inch long. *Peduncle* or flowering stem 2 inches high. *Capitula* about ⅕ inch long, subcorymbose; scales of the involucres with three transparent nerves; *flowers* all quadrifid.—*Muell.*

(Page 197.) Craspedia *macrocephala*, Hook., and *C. alpina*, Back., are confidently referred to *C. Richea*, Cass., by Archer.

(Page 217.) Gnaphalium *alpigenum*, Muell.

Mr. Archer agrees with me in thinking this an alpine form of *G. collinum*, Lab. He has found on the Western Mountains a very distinct-looking variety of it, growing prostrate, with the leaves uniformly clothed with silvery wool on both surfaces, and one or (rarely) two capitula. This is the *G. involucratum*, var. *radicans*, and var. *monocephalum*, Muell., who discovered it on the Australian Alps at elevations of 5–6000 feet. His specimens, when old, become scapigerous, the solitary capitula being borne on an elongated, slender, erect stem. To Archer and myself it appears more referable to *G. collinum* or *alpigenum* than to *involucratum*.

G. collinum, var. *monocephalum;* parvulum, foliis confertis undique appresse argenteo-lanatis, capitulis solitariis sessilibus v. post anthesin pedunculatis.—*G. involucratum*, var. *monocephalum* et *radicans*, Muell.

Hab. Western Mountains, *Archer*.

The involucral scales are more numerous and in more series in this than in *G. alpigenum*, but the plants are otherwise very similar, and all approach states of *G. involucratum* very closely.

(Page 224.) To *Senecio* add—

§ 4. *Stems* none. *Leaves* all radical.

10. Senecio *primulæfolius* (Muell. Trans. Phil. Soc. Vict. 1855, p. 69); perennis; caule simplici basi sericeo-tomentoso, foliis radicalibus confertis petiolatis ovato-cordatis obtusis repandis subtus v. utrinque araneosis, caulino amplexicauli dentato, pedicellis 2–3 lanuginosis 1-bracteatis, involucro late campanulato, foliolis lineari-lanceolatis apice barbatis, ligulis magnis, acheniis glabris pappo ter brevioribus.

HAB. Mount La Peyrouse, *Oldfield* and *Stuart* (Mueller).

A scapigerous species, covered loosely with cobwebby wool. *Leaves* petioled, oblong, rounded at the apex, cordate at the base, about 1 inch long, glabrous above. *Scape*, in the only specimen I have seen (from Mueller), 6 inches long, with one large, sessile, auriculate, toothed bracteal leaf, bearing two capitula, neither of them expanded.

11. Senecio *papillosus* (Muell. l. c.); perennis; caule simplici unifloro pubescente basi dense piloso, foliis radicalibus confertis parvis ovato-spathulatis integerrimis in petiolum angustatis superne papillis asperis subtus subpilosis, caulinis anguste lanceolatis, pedunculo apice bracteato, involucri hemisphærici foliolis sub-20 lineari-lanceolatis apice sphacelatis et barbatis, ligulis magnis, acheniis glabris.

HAB. Mount Lapeyrouse, *Oldfield* and *Stuart* (*Mueller*).

A robust, scapigerous species, of which I have two specimens from Mueller. *Leaves* crowded, small for the size of the plant, $\frac{1}{2}$–$\frac{3}{4}$ of an inch long, spathulate, rather coriaceous, entire, with revolute margins covered with soft setæ that spring from a rigid, tubercular base. Under-surface and scape with longer, scattered, white hairs, and abundantly clothed above with woolly, glandular hairs. *Scape* 8 inches high, stout, with a few small linear bracts. *Capitulum* solitary, 1 inch broad.

(Page 240.) Gualtheria *antipoda*, Forst., γ, is also found on Mount Lapeyrouse by *Oldfield*.

(Page 244.) Stenanthera *pinifolia*, Br.

HAB. Bruni Island, *Oldfield*.

(Page 245.) Cyathodes *macrantha*, Hook. fil., is considered to be a variety of *C. straminea* by Archer.

(Page 247.) Cyathodes *abietina*, Br.

At Southport, growing only 1–1$\frac{1}{2}$ feet high, *Stuart* (*Mueller in lit.*).

(Page 248.) Lissanthe *daphnoides*, Br.—Pillwater, *Oldfield*.

(Page 249.) Leucopogon *affinis*, Br.

Mueller informs me that this is a very distinct species, differing in its red, compressed, bilocular drupe. It extends northwards to Moreton Bay.

(Page 251.) Leucopogon *ciliatus*, A. C.

Mueller confirms my suggestion, by referring this to *L. collinus*, Br.

(Page 253.) Decaspora.

Mueller modifies the generic character thus:—"*Calyx* 2-pluri-bracteolatus. *Corollæ limbus* glaber v. barbatus. *Bacca* 5–12-pyrena."

(Page 254.) Decaspora *Gunnii*, Hook. fil.—Mount Lapeyrouse, *Oldfield*.

(Page 255.) Pentachondra *involucrata*, Hook. fil.—Mount Lapeyrouse, *Oldfield*.

"Calyce corollæ tubo æquante."—*Muell.*

(Page 256.) Epacris *Gunnii*, Hook. fil.

Mueller refers this to *E. microphylla*, Br., a native of Australia from Moreton Bay to Victoria, but I cannot think these plants the same.

(Page 257.) Epacris *ceræflora*, Grah., and *E. ruscifolia*.

Mueller and Archer both refer these to *E. impressa*, Lab.

(Page 258.) Epacris *lanuginosa*, Lab., and *E. mucronulata*, Br., are both referred by Mueller to *E. heteronema*, Lab.

(Page 260.) Epacris *serpyllifolia*, Br., becomes a twiggy shrub, 3 feet high, on Mount Wellington, *Oldfield*.

Archer refers this, *E. exserta*, Br.; and *E. virgata*, Hook. fil., to *E. myrtifolia*, Lab.

(Page 262.) Prionotes *cerinthoides*, Br.

At Southport and on Mount Lapeyrouse this attains a great height, by rooting in the bark of trees, *Stuart*.—I am disposed to refer the genus to *Ericeæ* proper.

(Page 263.) Archeria *hirtella*, Hook. fil.

HAB. Mount Lapeyrouse, *Oldfield*.

Archeria *eriocarpa*, Hook. fil.

Mueller considers this to be a variety of *hirtella*, I think, erroneously.

Archeria *minor*, Hook. fil.

Undoubtedly a variety of *A. serpyllifolia*, Hook. fil., which is found on Mount Lapeyrouse, *Oldfield*.

(Page 264.) Sprengelia. Mueller thus modifies the generic character:—"*Petala* basi connata, demum soluta."

Archer refers *S. propinqua*, A. C., and *S. montana*, Br., to forms of *S. incarnata*, Sm.

Sprengelia *propinqua*, A. Cunn. Mount Lapeyrouse and Western Mountains, *Oldfield*.—*Caulis* 8–10-pedalis, *Mueller*.

β. demissa (Muell. Fragment. Phyt. p. 39); parvula, prostrata; foliis minoribus sensim acuminatis, floribus sæpe solitariis, *Mueller*.

HAB. Summit of Mount Lapeyrouse, *Oldfield*.

(Page 265.) Cystanthe. Mueller (Fragment. Phyt. p. 37) includes *Pilitis* as a section of this genus, and adds a third section and new species:—

§ LOBANTHERA. *Antheræ* longitudinaliter a medio ad apicem dehiscentes, hinc bilobæ. *Squamulæ* hypogynæ 0.

2. Cystanthe *procera* (Mueller, l. c.); foliis demum recurvo-patentibus angusto-lanceolatis, adultis ovato-lanceolatis, omnibus sensim longe aristatis, corollæ cono fere triplo longiore quam lato, filamentis crassiusculis.

HAB. Plains of Southport, *Oldfield*.

A tree 20–30 feet high. *Leaves* nearly 1 inch long, with scabrous margins. *Fruit* unknown.

(Page 267.) Richea *dracophylla*, Br.

Mueller considers that this is not the plant figured by Guillemin. Add to habitats—various places in the southern parts of the island, *Oldfield*.

(Page 267.) Richea *scoparia*, Hook. fil.

Mueller considers this to be the *R. dracophylla* of Guill., l. c. (not of Brown), and adds that it attains 20 feet in height.

(Page 278.)—

Gen. XVIII. DRACOPHYLLUM.

Calyx 5-phyllus, bracteatus. *Corolla* tubuloso-infundibuliformis; loborum apicibus incurvis, imberbibus. *Stamina* 5, hypogyna v. corolla inserta. *Squamæ* hypogynæ 5. *Ovarium* 5-loculare; ovulis columnæ centrali pendulæ affixis. *Capsula* loculicide 5-locularis.—Arbores, frutices, suffruticesve; ramis *cicatricatis, annulatis;* foliis *linearibus gramineisve, basi vaginantibus;* floribus *solitariis, racemosis, paniculatis spicatisve.*

A very fine genus, abundant in New Zealand, rarer in Australia and Tasmania; one species is found in New Caledonia.—Trees or shrubs, sometimes very small. *Branches* with annulate scars from the sheathing bases of the deciduous leaves. *Flowers* racemose or spicate, rarely panicled, pedicelled. *Pedicels* bracteate. *Calyx* of five leaves. *Corolla* broadly tubular. *Filaments* free or attached to the corolla. *Hypogynous scales* five. *Ovary* five-celled, with pendulous placentæ. *Capsule* dry, five-valved. (Name from δρακων, *a dragon*, and φυλλον, *a leaf;* from the analogy of the foliage with that of *Dracæna*.)

1. Dracophyllum *Milligani* (Hook. Ic. Pl. t. 845); subacaule; foliis coriaceis rigidis subulatis superne concavis falcato-secundis apice incurvis tortisve spicam superantibus margine asperulis, pedunculo pubescente, spicis brevibus in spicam amentiformem longe bracteatam confertis, staminibus hypogynis, squamis hypogynis brevibus.—*Gunn*, 2051.

Hab. Mount Sorrell, Macquarrie Harbour, *Milligan*. Mount Lapeyrouse, *Oldfield*.

Whole plant apparently forming a low, rigid, tufted shrub, a foot high, branching from the very base. *Leaves* densely crowded, a span to 10 inches long, very rigid, subsecund, gradually tapering from a broad sheathing base to an incurved or twisted tip, concave on the back, convex in front; margins rough. *Peduncle* bearing a crowded mass of flowers, towards its summit sometimes 1½ foot long, formed of short sessile spikes, subtended by long leafy bracts. *Flowers* small, white?—The inflorescence of this is similar in structure to that of *Richea dracophylla*, Br.

2. Dracophyllum *minimum* (Muell. Fragment. Phyt. Aust. p. 39); humillimum, glaberrimum; foliis parvis arcte imbricatis e basi cordata in acumen longum angustatis, floribus solitariis sessilibus terminalibus, filamentis tubo corollæ adnatis, squamis hypogynis bidentatis.

Hab. Mount Lapeyrouse, growing amongst masses of *Pterygopappus*, *Oldfield* (*Mueller*).

I am indebted for the means of describing this remarkable little plant to Mueller. It differs conspicuously from the *D. Milligani* in its adnate filaments, in this respect resembling the New Zealand species.—A minute plant, 1–2 inches high. *Leaves* about 2 lines long, with broad cordate bases and sharp trigonous apices. *Flower* solitary, sessile amongst the upper leaves, very small; corolla 2 lines long.

(Page 270.) 2. Sebæa (§ *Phyllocalyx*) *albidiflora* (Muell. in Trans. Phil. Soc. Vict. 1854–5, p. 47); caule erecto tenuiter alato, foliis subcarnosis enerviis late ovatis inferioribus subrotundatis, sepalis vix carinatis oblongis obtusis basi alatis, floribus 4-fidis.—*Kew Journ. Bot.* ix. p. 164.

Hab. Saline pastures, Georgetown (*Mueller*).

Distrib. Victoria: Port Phillip to Port Fairy.

Distinguished from *S. ovata*, Br., to which in habit it is very similar, by the shorter, broader, blunter leaves, white flower, and especially by the broader sepals.

(Page 271.) Gentiana *montana*, Forst., and β *G. Diemensis.*

Mueller says that these are different species; *G. montana* is annual, rarely biennial, flowers first, and has smaller flowers; and that *G. Diemensis*, Griseb., is perennial, has larger flowers, produced later, and is always very alpine.

(Page 272.) 2. Villarsia *exigua*, (*Limnanthemum*, Muell. Fragm. Phyt. p. 40); glabra; foliis minutis ovatis indistincte venosis, pedunculis solitariis paucisve, calycis 5-fidi dentibus lanceolato-deltoideis, corolla calycem paulo superante flava lobis integerrimis, stylo brevi, capsula basi calyce adnata.

HAB. Salt-marshes, at Southport, *Oldfield* (*Mueller*).

Mueller describes this as a small, stoloniferous, floating herb, with ovate or rounded leaves 2–6 lines long. *Peduncles* as long as the petioles or shorter. *Calyx* scarcely 2 lines long. *Petals* naked. *Capsule* ovate, adnate with the calyx below.—Allied to *V. capitata*, Nees, of Swan River, and *V. minima* of tropical Australia (*Mueller*).

Liparophyllum.

Mueller reduces this to a section of *Limnanthemum*, Gmel. (*Villarsia*, Vent.), and I have no doubt correctly, and it may hence bear the name of *V.* or *L. Gunnii.*

(Page 275.) 6. Mitrasacme *Archeri* (Hook. fil.); cæspitosa, glaberrima; foliis parvis imbricatis oblongo-lingulatis basi in tubulum connatis coriaceis cartilagineo-marginatis, floribus solitariis terminalibus sessilibus, sepalis 4, 2 exterioribus foliiformibus basi connatis 2 interioribus parvis, stylis distinctis.

HAB. Western Mountains, *Archer.*

A small, densely tufted species, allied to *M. montana*, Hook. fil., and precisely like it in the structure of the calyx, which appears to consist of only the two inner, small, ovate-lanceolate segments, the two outer being altogether like the leaves, and connate into a tube at the base.—A minute, glabrous, tufted herb. *Stems* $\frac{1}{2}$–$1\frac{1}{2}$ inch high, with imbricating, glossy, coriaceous, almost cartilaginous, linear-oblong, subacute leaves, which have pale edges and a very few cilia at the margin, near their connate bases, $\frac{1}{8}$–$\frac{1}{10}$ inch long. *Flower* sessile, solitary. *Corolla* short, four-cleft to the middle; lobes ovate, acute. *Stamens* inserted just within the throat. *Capsule* with broadly diverging lobes exactly as in *M. montana.*

(Page 278.) Cuscuta *australis*, Br.

Engelmann considers the Tasmanian plant to be distinct and very remarkable on account of its almost funnel-shaped stigma. It, however, agrees perfectly with Brown's character of *C. australis*, except in the scales reaching halfway up the filaments. The styles are very long; the stigmas large, obscurely bilobed, and the calyx-lobes narrower than in another Australian species called *C. australis* by Mueller (east coast, tropical Australia, *D. Moore*, and Goulbourn River, Victoria, *Mueller*), and which is referred by Engelmann to a var. (*squamis vix ullis*) of the South American *C. obtusiflora*, H.B.K. My New Zealand *C. densiflora* is considered by Engelmann to be scarcely distinct from the *C. racemosa* of S. America; it has broad sepals, very large fimbriated scales rising a little above the bases of the filaments, and capitate, obscurely four-lobed stigmas. The whole genus appears to me to be in confusion.

(Page 280.) Cynoglossum *suaveolens*, Br., referred to in the observations under *C. australe*, Br., has been confounded by me with that plant from having been accidently mixed in Gunn's collections. Their diagnoses (well given by Brown) are as follows:—

1. Cynoglossum *australe* (Br. Prod. p. 495); racemis ebracteatis, foliis omnibus lanceolatis.

HAB. Abundant in dry pastures throughout the Island, *Gunn, etc.* (*v. v.*)

DISTRIB. New South Wales and Victoria.

2. Cynoglossum *suaveolens* (Br. l. c.); racemis bracteatis, foliis superioribus basi latioribus.

HAB. Abundant in dry soil, *Gunn, etc.* (*v. v.*)

Distrib. New South Wales, Victoria, and Swan River.

Of these species *C. suaveolens* is generally, but not always smaller, has bracts at the base of the pedicel of each flower, and smaller yellowish flowers smelling strongly of storax; the flowers of *C. australis* are blue and inodorous.

(Page 281.) Mentha *gracilis*, Br., is considered by Archer to be a form of *M. australis*, Br.

(Page 284.) 4. Prostanthera *cuneata*, Benth.

Mueller tells me this is the *P. retusa*, Br. Prod. p. 509, which name it should bear.

(Page 285.) Westringia *angustifolia*, Br., is very different from *W. eremicola*, A. C. (*Mueller*).

(Page 288.) Solanum *aviculare*, Forst.

Berries oblong, yellow.—Mueller remarks that the plant which I have described under this name is certainly Forster's, and is Brown's *S. laciniatum*; but that his *S. vescum*, which Oldfield assures him is not found in Tasmania, is a very different plant, has invariably large, green, eatable berries, and is the "Gunyang" of the aborigines. Mueller also thinks that the figure of *S. laciniatum*, Bot. Mag. t. 349, is his *S. vescum*.

(Page 289.) Anthocercis *Tasmanica*, Hook. fil. For Tab. LXXXVIII. *A.* put XCII.

It is very nearly allied to, if not identical with, *A. albicans*, A. Cunn. (Sweet, Fl. Aust. t. 16).

(Page 291.) Gratiola *pubescens*, Br.

Mueller informs me that this is found in various parts of Tasmania, and I have excellent specimens from Archer, who suggests the possibility of all the three described *Gratiolæ* proving forms of one.

(Page 296.) Euphrasia *alpina*, Br., *collina*, Br., and *multicaulis*, Benth., are, according to Archer, forms of one species.

(Page 297.) Euphrasia *cuspidata*, Hook. fil.
Hab. Mount Lapeyrouse, *Oldfield*. Western Mountains, *Archer*.

(Page 304.) Plantago *Brownii*, Rap.

Mueller has found a plant very closely resembling this on the Australian Alps, and called it *P. stellata*, with a query as to whether it may not be a variety of *P. Brownii*.

(Page 310.) Trichinium *spathulatum*, Br.

Mueller observes that he has never found all the stamens to be fertile in this genus as represented in Tab. XCIV.

(Page 318.) Cassytha *pubescens*, Br.

Berry spherical, green (*Mueller*). *C. glabella*, Br.—*Berry* often red (*Mueller*).

(Page 321.) Persoonia *Gunnii*, Hook. fil.

Berry dull-red (*Mueller*).

(Page 323.) Grevillea *Stuartii*, Meisn., is a var. of *G. australis*, Br. (*Mueller*).

(Page 325.) Hakea *lissosperma*, Br., attains a height of 30 feet, *Archer*.

(Page 329.) Lomatia *polymorpha*, Br.

Mueller informs me that he was in error in supposing this to be a native of Victoria.

(Page 330.) Drapetes *Tasmanica*, Hook. fil.
Hab. Summit of Mount Lapeyrouse, *Oldfield*.

Meisner, DC. Prod. xiv. p. 566, makes of this and the Borneo species a new genus *Daphnobryon*, removing it to another tribe of the Order from the Fuegian species, whilst the New Zealand species is placed in a third genus—*Kelleria*.

(Page 331.) Pimelea *drupacea*, Lab., *Gunnii*, Hook. fil., and *cinerea*, Br., are considered by Archer as possibly forms of one species.

(Page 333.) Pimelea *cernua*, Br., and *linifolia*, Ser.

Archer agrees with me in thinking that these may be referable to one species, to which Mueller adds *P. Lindleyana*, Meisn. in DC. Prod. xiv. p. 499.

Since the printing of the Pimeleas in the 'Tasmanian Flora,' I have received Dr. Meisner's monograph of *Thymeleæ* in De Candolle's 'Prodromus,' vol. xiv.; he describes the following as Tasmanian species :—

1. P. *cernua*, Br.,—the same as *linifolia*, Ser. (*v. supra*).
2. P. *nutans*, Meisn., Gunn, n. 623,—the same as *cernua* and *linifolia*, distinguished by Meisner by the always nodding heads, smaller sparingly pubescent calyx, and exserted style.
3. P. *Lindleyana*, Meisn.,—referred by Mueller to *cernua*, and probably correctly.
4. P. *glauca*, Br. (p. 334).
5. P. *humilis*, Br. (p. 334).
6. P. *ligustina*, Lab. (p. 333).
7. P. *cinerea*, Br. (p. 333).
8. P. *incana*, Br.,—is *P. nivea*, var. *β incana* (p. 332).
9. P. *nivea*, Lab. (p. 332).
10. P. *sericea*, Br. (p. 333).
11. P. *Milligani*, Meisn.,—is *P. pygmæa*, Muell. (p. 335).
12. P. *flava*, Br. (p. 333).
13. P. *pygmæa*, Muell. (p. 335).
14. P. *gracilis*, Br. (p. 331).
15. P. *filiformis*, Hook. fil. (p. 331).
16. P. *drupacea*, Lab. (p. 331).
17. P. *pauciflora*, Br. (p. 335).

(Page 336.) Exocarpus *humifusa*, Br.

Probably a small state of *E. cupressiformis*, Lab., and scarcely distinguished from *E. Bidwilli*, Hook. fil., of New Zealand, and *E. Gaudichaudii*, A. DC., of the Sandwich Islands, of which I have examined a specimen gathered by Menzies in 1792: this latter I had referred to *E. humifusa* before the publication of the *Santalaceæ* by A. De Candolle, who notes its resemblance to the New Zealand plant.

(Page 337.) 2. Leptomeria *glomerata* (Muell.); ramulis robustis, floribus glomeratis, glomerulis sessilibus, perianthio 4–5-fido.

HAB. Southport, *Stuart*. Police Point, Huon River, *Oldfield*.

A more robust species than *L. Billardieri*, easily distinguished by the sessile glomeruli of 3–4 flowers.

Leptomeria *Billardieri*, Br.

This has a 4–5-cleft perianth, which is often glabrous internally, but has occasionally a few minute hairs on the anterior face of the segments above the stamens. I have specimens from the Huon, collected by Oldfield, infested

with the same coccus as the var. β. The differences between *L. acida*, Br., and *L. Billardieri*, Br., its var. β with shorter fewer-flowered spikes, and *L. glomerata*, seem to be mainly of degree only.

Var. β has shorter spikes and is intermediate between *L. glomerata* and *L. Billardieri.*

Alphonse De Candolle, Prod. xiv. p. 681, states that he has seen specimens of *Omphacomeria psilotoides*, A. DC., from Tasmania, sent to Vienna under n. 541 of Gunn. The genus *Omphacomeria* coincides with Brown's second section of *Leptomeria*, which includes *L. acerba* (*O. acerba*, A. DC.), a plant not hitherto found in Tasmania.

(Page 339.) Beyeria *oblongifolia*, Hook. fil., and *Backhousii*, Hook. fil.

Oldfield and Mueller both consider that there is but one Tasmanian species, and that the *B. viscosa* (*Croton viscosum*, Lab.).

Bertya *rosmarinifolia*, Planch., is *Ricinocarpus Tasmanicus*, Sond. and Muell. in Linnæa, 1856, p. 562.

(Page 344.) Parietaria *debilis*, Forst.

Weddell (Monog. Urt. 517) considers the Levant and Portugal plant which I had referred to this, to be *P. Lusitanica*, L., but adds many other tropical and temperate extra-European localities.

(Page 345.) Australina *pusilla*, Gaud.; *a minor*. Southport and base of Quamby's Bluff, *Oldfield*. *β major;* foliis subuncialibus basi cuneatis. Coal River Tier, *Oldfield*.

(Page 346.) Fagus *Gunnii*, Hook. fil.

Hab. Mount Lapeyrouse, *Oldfield*.

(Page 358.) Microcachrys *Tasmanica*, Hook. fil.

Hab. Mount Lapeyrouse, *Oldfield*.

VOLUME II.

MONOCOTYLEDONES.

(Page 3.) Alter the number of the genus Thelymitra to XVI., and of the succeeding genera accordingly.

(Page 12.) Prasophyllum *alpinum*, Br.

Posterior sepals always united below the middle, *Archer*.

(Page 13.) Prasophyllum *brachystachyum*, Lindl., and *nudiscapum*, Hook. fil., are natives of Victoria.

(Page 14.) Alter the numbering of *Calochilus* to IV., and of the following genera accordingly.

(Page 17.) Burnettia *cuneata*, Lindl., has been found at Oyster Cove by Dr. Milligan (*Mueller*).

(Page 18.) After *Caleana major* add—

2. Caleana *minor* (Br. Prod. 329); folio anguste lineari canaliculato, scapo medio ebracteato, labelli lamina tuberculata, apice angustato bilobo.—*Lindl. Gen. et Sp. Orchid. p.* 429.

Hab. Near Hobarton, *Gunn*. (Fl. Dec.)

Distrib. New South Wales and Victoria.

A much smaller plant than *C. major*, with a narrower leaf, ebracteate scape, smaller flower, with tuberculate lamina of the lip.

(Page 19.) Pterostylis *pedunculata*, Br., and *P. nana*, Br.

Archer considers that the figures *A* and *B* of Plate CXIV. are reversed; *A* being *P. nana*, and *B. pedunculata*. Neither are good, but *A* certainly belongs to *P. pedunculata*, though the leaves should be more oblong and petioled. *B* is perhaps the Australian *P. concinna*, Br., a larger plant than *P. nana*, but otherwise very near it.

Pterostylis *obtusa*, Br., often bears withered radical leaves on the flowering scape (*Archer*).

(Page 21.) Line 4—for *B.* put *A.*

(Page 23.) Chiloglottis *Gunnii*, Lindl., has been found in Victoria by Mueller.

(Page 24.) Microtis *rara*, Br., is, as Dr. Lindley informs me, found in New Zealand (*M. porrifolia*, Spr.), Java, New Caledonia, and the Island of Bonin.—On re-examining the Tasmanian and Australian species of *Microtis* with the descriptions and drawings of this work, I find them to be inextricably confused, and do not see how to discriminate them.

(Page 25.) Add—

3. Acianthus *viridis* (Hook. fil.); floribus 1–3, sepalo dorsali fornicato ovato-lanceolato lateralibusque oblongo-lanceolatis obtusis muticis, petalis brevissimis, labello trapezoideo obtuso.

Hab. Base of Mount Wellington (Oct., Nov., 1839–40), *Gunn*.

This very distinct little plant was sent to me by Mr. Gunn in a letter, and, like the *Caleana minor*, arrived only as this sheet was passing through the press. It is of the same size as, and a good deal like, *A. exsertus*, but at once distinguished by its fewer flowers, green colour, blunt sepals, the lateral of which are recurved, minute petals, and very broad trapezoid labellum. The solitary leaf has undulated, almost crenate or sinuate margins.

(Page 28.) Caladenia *Patersoni*, Br.

I omitted quoting Lindley, Gen. et Sp. Orch. p. 422.—Sweet-scented. Archer has Lindley's variety β, in which the glands are always in four rows only.

Caladenia *pallida*, Lindl.

Archer is doubtful as to this being distinct from *C. Patersoni*, and, with justice, quotes the figures of this work in corroboration. Mueller, on the other hand, considers all the species of the second section to be forms of one!

(Page 29.) Caladenia *barbata*, Lindl.

Archer remarks that the old and young tubers are enclosed in a common tunic, as in *Glossodia major*.

(Page 30.) Caladenia *alata*, Br.

Archer remarks that Brown's plant is described as having the glands biseriate, and that it has a musky odour.

(Page 32.) Dipodium *punctatum*, Br. (Tab. CXXVII.)

By an unfortunate oversight the colouring of this Plate is very incomplete and inaccurate. It is well represented in the works quoted after the diagnosis,—Smith's 'Exotic Botany' and Lindley's 'Botanical Register,'—and (as there represented) the scape should be washed over with a pale brown, leaving hardly a trace of green, and the flowers should be spotted.

(Page 33.) Gunnia *australis*, Lindl., has been found at Cape Otway, Victoria, by Mueller, who reduces the genus to *Sarcochilus* (*S. Barkleyanus*, Fragment. Phyt.).

Add—

Gen. XXI. DENDROBIUM, *L.*

Perianthii foliola membranacea, patentia. *Sepala* lateralia majora, obliqua, cum pede columnæ connata. *Labellum* sessile, cum pede columnæ articulatum v. connatum. *Columna* semiteres, basi longe

producta. *Anthera* 2-locularis. *Pollinia* 4, per paria collateralia.—Herbæ *caulescentes, epiphyticæ, habitu variæ;* caulibus *elongatis, articulatis v. in pseudobulbos densinentibus;* foliis *coriaceis membranaceisve, cum caule articulatis.*

A very extensive Indian and Pacific Island genus, of which several species inhabit the east coast of Australia. —*Stems* generally rigid and tufted, long or short and swollen. *Flowers* often large and beautiful, small in the Tasmanian species. *Sepals* three, rather membranaceous, the lateral largest, connate with the base of the column. *Lip* articulate or connate with the base of the column, which is produced at the base. *Anther* two-celled, with four pollen-masses. (Name from δενδρον, *a tree*, and βιος; *life*, in allusion to the epiphytic habit.)

1. Dendrobium *Milligani* (Mueller, Fragm. Phyt. p. 88); caulibus radicantibus ramosis cylindraceis, vaginis membranaceis demum laceris, foliis subulato-filiformibus breviusculis, pedunculis oppositifoliis 1-floris, labelli 3-carinati lobo medio subovato acutiusculo apicem versus crispato lateralibus brevissimis obtusis.—*Descript. e cl. Muell. excerpt.*

Hab. Strzelecki's Peak, Flinders Island, alt. 3000 feet; and on granite rocks on Freycinet's Peninsula, *Milligan.*

I am indebted to Dr. Mueller for specimens of this curious and very interesting plant, but they are in too imperfect a state for a satisfactory description; it is a small species, with alternate subulate leaves 1–3 inches long, and tufted fibrous roots.—*Flowers* small, yellowish, solitary, opposite the leaves.

2. Dendrobium, *sp.?*

Mr. Gunn has sent me a little fragment of a second species of this genus, gathered on the east coast, also by Dr. Milligan, which Dr. Lindley informs me is quite new, and allied to the *D. Milligani.*

(Page 34.) Add—

2. Patersonia *longiscapa* (Sweet, Austral. t. 39); scapo foliis longiore apice incrassato, spatha non striata, tubo perianthii piloso.—P. glauca, *Bot. Mag. t.* 2677, *non Br.*

Hab. Tasmania, *Archer.*

Distrib. Victoria.

A very distinct species, though similar at first sight to *P. glauca.* I am indebted to Mr. Archer for drawing my attention to it in his herbarium: it does not occur in Gunn's (whose specimens I have again examined in the vain endeavour to find more than one species amongst them). *P. longiscapa* is easily recognized by the scape longer than the leaves, and thickened below the spatha; by the spatha not being striate, and by the pilose tube of the corolla. The stigma appears to be erect. The quotation of the Bot. Mag. t. 2677, under *P. glauca,* should be cancelled.

(Page 34.) Libertia *Lawrencei,* Hook. fil., has been found in Victoria.

(Page 43.) Zannichellia *palustris,* L.

This is certainly the *Z. Preissii,* which I have doubtfully quoted, and differs from the ordinary forms of *Z. palustris* in the longer, slender style, even back of the carpel, and apparently six-celled anthers. The carpels and style, however, vary extremely in European specimens of *Z. palustris,* and I suspect that most of the so-called species of this genus will ultimately be reduced to that plant.

(Page 47.) Hewardia *Tasmanica,* Hook., has been found on Mount Lapeyrouse by *Oldfield.*

(Page 49.) Drymophila *cyanocarpa,* Br., has been found in Victoria by *Mueller.*

(Page 53.) Add—

4. Cæsia? *alpina* (Hook. fil.); foliis anguste lineari-elongatis scapum brevem longe excedentibus,

floribus parvis spicatis suberectis paucis binis v. subfasciculatis flavis?, pedicellis brevissimis infra florem articulatis, filamentis brevibus.

HAB. Western Mountains, *Archer.*

I am doubtful about the genus of this curious but insignificant little plant, which appears to differ from *Cæsia* in the perianth not being twisted after flowering.—*Stems* very slender, formed of the sheathing bases of the leaves, tufted, scarcely swollen at the base. *Root* of thick fibres. *Leaves* 2–3 from each stem, spreading, flaccid, 6–8 inches long, not $\frac{1}{8}$ inch broad, linear, quite flat. *Scape* $\frac{1}{2}$–1 inch long, rather stout, curved, bearing 3–5 fascicles of two or more flowers, each fascicle subtended by a broadly ovate, membranaceous bract. *Pedicels* very short, $\frac{1}{4}$–$\frac{1}{2}$ lin. long; generally a flower and young fruit are together in each axil. *Flower* about $\frac{1}{8}$ inch long; segments of the perianth linear-oblong, with three stout nerves united at the very base. *Stamens* short; filaments narrowed at both ends, their apices inserted under a small hood at the back of the anther below its middle. *Anther* broadly obovate-oblong; the valves somewhat recurved at their apices. *Ovary* of three unequal rounded lobes, each with two collateral ovules. *Style* two-thirds the length of the flower, minutely three-lobed at the apex.

(Page 59.) Laxmannia.

In the generic description I inadvertently omitted to mention the remarkable fact of a species of this genus being found in the Island of Timor. It is figured in Decaisne's Herb. Timor. Descript.

(Page 68.) Luzula *Oldfieldii,* Hook. fil.

Mueller considers this to be a large state of *L. campestris,* L., in which opinion I can scarcely concur.

(Page 81.) Chætospora *capillacea,* Hook. fil., has a trifid style.

(Page 85.) Number the genus *Elæocharis* VII., and alter the succeeding genera accordingly.

(Page 90.) Add—

3. Scirpus *lacustris* (Linn.); culmo tereti aphyllo, spiculis umbellatis paniculatisve versus apicem culmi lateralibus ovatis, squamis late ovatis ciliatis trifidis mucronatis, antheris apice appendiculatis, nuce trigona brevi obovata, setis 6 setulis reversis scabris.—*Fl. N. Zeal.* i. *p.* 269.

HAB. Marshy banks of rivers, and in still waters; probably common.

DISTRIB. Abundant in all temperate and tropical regions.

A tall, leafless, marsh or water plant, the Bulrush of some parts of England, where it is extensively used for matting, thatching, and coopering.—*Culms* 2–8 feet high, rounded, sheathed at the base, spongy inside. *Spikelets* ovate, $\frac{1}{4}$–$\frac{1}{2}$ inch long, lateral, panicled or umbellate, sessile or peduncled. *Scales* broadly ovate, bluntly trifid, ciliated, mucronate. *Nut* short, trigonous, with a 2–3-forked style. *Bristles* six, reversely hispid.

(Page 95.) 4. Cladium *Gunnii,* Hook. fil.

Mueller assures me that his *Gahnia sulcata* is a true *Gahnia,* having elongated filaments which retain the seed. It is a local species, growing also in South Australia.

(Page 105.) Microlæna *Gunnii,* Hook. fil.

This species has no squamulæ, the filaments being adnate to the base of the ovary: the generic character should be altered accordingly to "squamulæ 2 v. 0."

(Page 115.) Agrostis *æmula,* Br., is considered by Mueller to be a variety of *A. Billardieri,* Br.

(Page 116.) Agrostis *contracta,* Muell., has the lower palea sometimes shortly awned.

(Page 122.) Danthonia *Archeri,* Hook. fil.,—for TAB. CLXXII., put CLXIII.

CRYPTOGAMIA.

(Page 133.) Hymenophyllum *unilaterale*, Willd., is considered by Mueller to be a form of *H. Tunbridgense*, Sm.

(Page 136.) Cystopteris *fragilis*, *β*, has been found on the mountains of the Middle Island of New Zealand by *Dr. Sinclair*.

(Page 141.) Lomaria *Patersoni*, Br., has been found near New Norfolk by *Oldfield* (*Mueller*).

(Page 145.) Asplenium *Trichomanes*, L., has been found by Dr. Sinclair in the same locality in New Zealand as *Cystopteris fragilis*, *β*.

(Page 147.) Doodia *caudata*, Br.

In the 'New Zealand Flora,' I referred *D. Kunthiana*, Endl., and *D. aspera*, Br., to *D. caudata*, Br. I did so because A. Cunningham had described them all as New Zealand plants. Sir W. Hooker, in revising this genus for the 'Species Filicum,' finds that Cunningham's New Zealand *aspera* and *Kunthiana* are not the plants of Endlicher and Brown, but mere varieties of *D. caudata*. These synonyms should therefore be omitted in the Tasmanian and New Zealand Floras. It is even doubtful whether the New Zealand *D. caudata* is the same as the Tasmanian.

(Page 152.) Schizæa *bifida*, Sw., and *S. fistulosa*, Lab., are different species, as has been pointed out to me by Mueller, and may be thus characterized :—

1. Schizæa *bifida* (Sw. Fil. 151); fronde antice late concava simplici v. divisa asperula, appendicibus ascendentibus elongatis, involucris crinitis.—*Br. Prod.* 162. S. dichotoma, *Sw.*, *var.* bifida, *Mueller*.

Hab. Tasmania, *Brown*.

Distrib. Tropical and temperate Australia, New Zealand, Asia, and America.

Mueller (probably correctly) considers this a variety of the common tropical *S. dichotoma*, which has a broader, flabellately-divided frond.

2. Schizæa *fistulosa* (Lab. Fl. Nov. Holl. ii. 103. t. 250. f. 3); fronde teretiuscula antice sulcata simplici læviuscula, appendicibus brevibus, involucris fimbriato-laceris.—*Br. Prod.* 162. S. australis, *Gaud.*

Hab. Sandy plains; not uncommon, *Gunn*, *etc.* (*v. v.*)

Distrib. Temperate Australia, New Zealand, Lord Auckland's Island, Tropical America.

Distinguished from *S. bifida* by the terete frond, grooved (not concave) in front, and the much shorter lobes that are not so erect.

(Page 155.) Lycopodium *varium*, Br., and *L. Selago*, L.

Mueller pronounces these to be assuredly forms of the same.

(Page 158.)—

2. Selaginella *Preissiana* (Spring, Monog. Lycop. ii. p. 62); annua; caule subsimplici erecto basi diviso, ramis erectis, foliis uniformibus subsquarrosis ovato- v. lineari-lanceolatis acuminatis obsolete 1-nerviis integerrimis, spica terminali sessili elongato-oblonga, squamis ovato-lanceolatis squarrosis.—Lycopodium gracillimum, *Kunze, Farrnkr. t.* 100. *f.* 1, *et in Plant. Preiss.* ii. *p.* 109.

Hab. South Esk River and other places in the northern parts of the island (*Mueller*).

Distrib. Victoria, *Mueller*, and Swan River, *Preiss*, *Drummond*, *etc.*

Distinguished from *S. uliginosa* by the smaller size, more flaccid habit, and frond divided at the very base only, not bifariously or dichotomously branched.

(Page 158.) Isoetes, *sp.?*

This may be a plant which Professor Braun has described as *Isoetes humilior*, Muell., of Victoria (Linnæa, vol. xxv. p. 722), and which Mueller informs me grows in the lowland waters of Tasmania, and of which his *I. elatior* is probably a variety. Both seem too closely allied to *I. lacustris*, L.

(Page 159.) Pilularia *globulifera*, L.

Professor Braun has described a *P. Novæ-Hollandiæ* from Australia, to which this may be referable, but Dr. Valentine, who made a complete study of the British species (and published an admirable account of *P. globulifera* in the Linnean Transactions), assured Mr. Archer that the Tasmanian species differed in no particular from the English.

Various Tasmanian and Australian *Characeæ* are described by Braun in the Linnæa, xxv. p. 704.

(Page 170.) After *D. angustifolium* insert—

Dicranum tenuifolium, Hook. fil. et Wils.; Fl. Antarct. t. 152. f. 7.

Hab. Rocks behind Cumming's Head, Western Mountains, *Archer*. Found also in Fuegia and the Australian Alps.

(Page 176.) In place of *Tortula mnioides?*, read—

Streptopogon *mnioides*, Mitten.

Fertile plants of this curious Moss, gathered in Chili by Lechler, have the calyptra large and mitriform; in other respects they agree well with Schwægrichen's figure. The cylindrical capsule is supported on a seta about one-third of an inch long; the peristome is that of *Tortula*. This species is very closely allied to *S. erythrodon*, found in Peru by Professor Jameson.

(Page 184.)—

6. Macromitrium *asperulum* (Mitten); dioicum, *M. Archeri* statura simile; caule elongato repente, ramis brevibus cæspitem densum formante, foliis densis patentibus siccitate incurvatis angustis, inferioribus e basi anguste elliptica paululo latiore loriformi-ligulatis apice obtusis, superioribus acutioribus acutatis nervo in apiculo brevissimo excurrente carinatis, marginibus ob papillarum prominentiam ubique asperulis, cellulis basi pro spatio brevi latitudinem folii paululum excedente elongatis angustis inde ad apicem quadrato-rotundatis distinctis papillosis, perichætialibus brevioribus sensim acutis, theca in pedunculo circiter trilineari ovali, collo sensim attenuato, ore intensiore colorato plicato, operculo conico-acuminato, calyptra nuda straminea, apice fusco.

Hab. On trees, *Lawrence* and *Gunn*. Found also in New Zealand, near Wellington, *Stephenson*, and elsewhere, *Knight* and *Lyall*.

Whole plant of an intense ferruginous-brown colour, more densely cæspitose than *M. Archeri*, with leaves of a different form and substance, as well as with erose margins. From *M. lingulare*, Mitten in Journ. Linn. Soc. ined., a New Zealand species, which has also a naked calyptra, it differs in its greater size, in the form of its leaves and of the cells of which they are at the base composed. There does not appear to be any peristome.

The Tasmanian examples of this species have been, in the Herbarium of Sir W. Hooker, referred to *M. microstomum*, Hook. et Grev., a rare Moss gathered also in New Zealand by Stephenson, but this last is in reality a totally different species, allied to *M. longipes*, Hook., and to *M. Reinwardtii*, Schw. This error appears to have arisen from the accidental sticking down on the same paper with the original a very small specimen of *M. microstomum* and of a small specimen of another species very nearly allied to *M. prorepens*, Hook., *M. erosulum*, Mitten in Journ. Linn. Soc. ined., having a pilose calyptra and the margins of its leaves erose. The *M. microstomum*, therefore, of the 'Flora of New Zealand,' is a compound of *M. asperulum* and *M. erosulum*, species closely related to *M. prorepens*, but with no near affinity to the original *M. microstomum*.

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[The Synonyms are in italics.]

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A. Thelymitra antennifera, *H.f.* B. T. Smithiana *H.f.*

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A. Thelymitra venosa, *Br.*

B . T. carnea, *Br.*

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A. Thelymitra nuda, Br. B. T. ixioides, Sm.

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A. Diuris sulphurea, *Br.* B. D. maculata, *Sm.*

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A. Diuris pedunculata, *Br.* B. D. corymbosa, *Lindl.*

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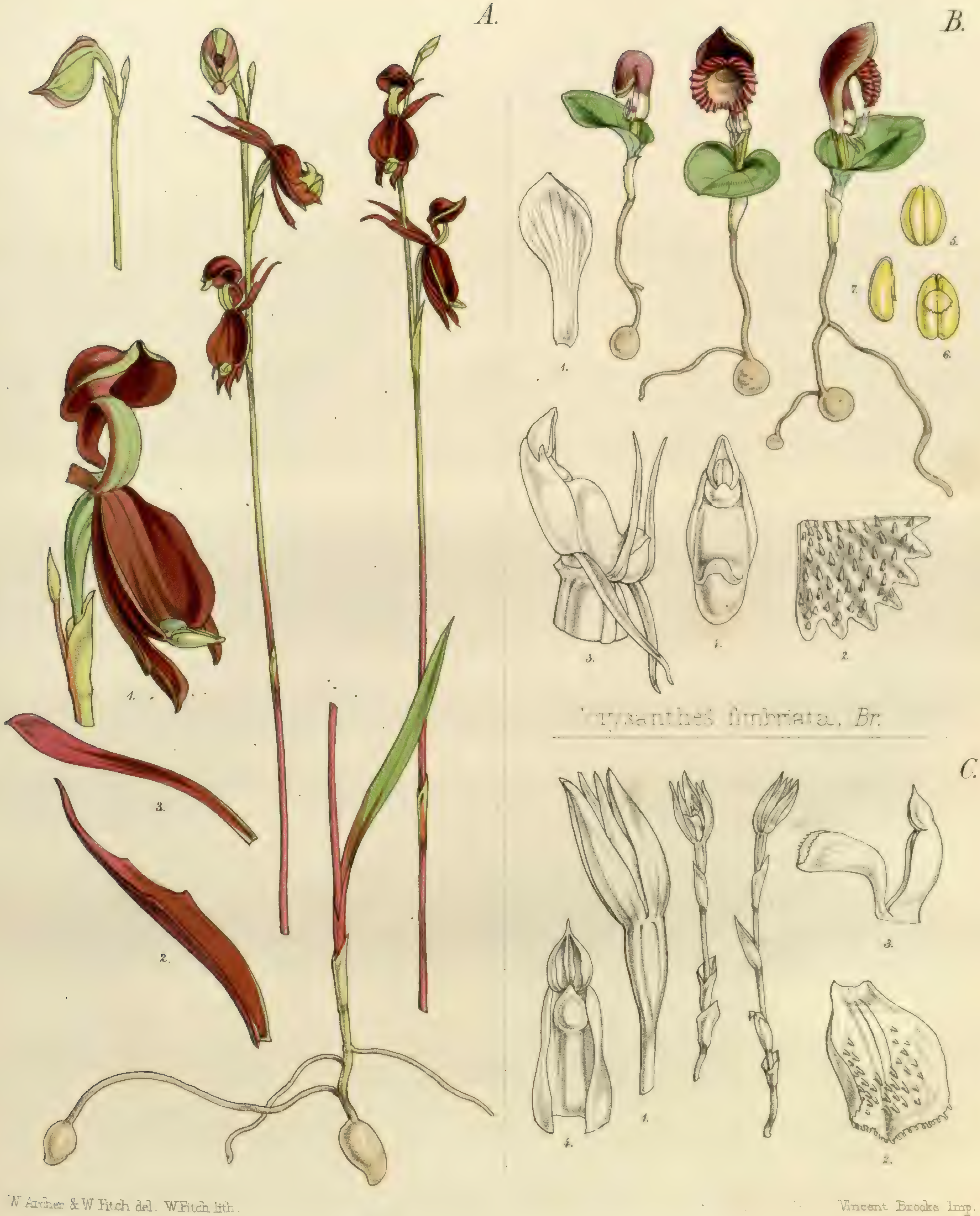
A. Calochilus campestris *Br.* B. Lyperanthus nigricans, *Br.*



ysanthes fimbriata, Br.

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Caleana major, Br. Burnettia cuneata, Lindl.

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A. Cryptostylis longifolia, *Br.*

C. Chiloglottis Gunnii, *Lindl.*

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A. *Prasophyllum flavum, Br.* B. *P. truncatum, Lindl.*

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Prasophyllum brevilabre, *H.f.* B. P. lutescens, *Lindl.*

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Prasophyllum patens, *Br*

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Vincent Brooks Imp.

Prasophyllum alpinum, *Br.*   P. fuscum, *Br.*

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P. despectans, *Hf* Prasophyllum Archeri. *Hf* P. nudum *Hf*

Plate CXIV.

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A. Pterostylis pedunculata, *Br.*

B. P. nana, *Br.*

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Vincent Brooks Imp.

P. cucullata, *Br.* Pterostylis dubia *Br.* P. obtusa, *Br.*

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P. squamata, *Br.* Pterostylis rufa *Br.* P. aphylla, *Lindl.*

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Microtis pulchella, *Br.*

M. arenaria, *Lindl.*

W. Archer & W. Fitch del. W. Fitch lith.

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Acianthus exsertus, *Br.* A. Caudatus. *Br.* Cyrtostylis reniformis. *Br.*

Plate CXX.

W. Archer & W. Fitch del. W. Fitch lith.

Eriochilus autumnalis, *Br.*

Vincent Brooks Imp

Glossodia major, *Br.*

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Caladenia Menziesii, *Br.* C. filamentosa, *Br.*

Plate XXI.

W. Archer & W. Fitch del. W. Fitch lith. Vincent Brooks Imp.

Caladenia clavigera, *A. Cunn.* C. dilatata. *Br.*

W. Archer & W. Fitch, del. W. Fitch, lith

Vincent Brooks, Imp

Caladenia Patersoni. *Br.* C. barbata. *Lindl.*

W. Archer & W. Fitch del. W. Fitch lith.

Vincent Brooks Imp.

Caladenia carnea, *Br.*

C. congesta *Br.*

W. Archer & W. Fitch del. W. Fitch lith. — Vincent Brooks Imp

Caladenia alata, *Br.* — C. angustata, *Lindl.*

W. Archer del. W. Fitch lith.

Vincent Brooks Imp.

Gastrodia sesamoides, *Br.*

Plate CXXVII.

W. Archer del. W. Fitch lith.

Vincent Brooks Imp.

Dipodium punctatum, *Br.*

Plate CXXVIII.

W. Fitch del. et lith.

Vincent Brooks Imp.

Gunnia australis, *Lindl.*

W. Fitch del. et lith.

Vincent Brooks Imp.

Libertia Lawrencei, *Hf.*

W. Fitch del. et lith.

Vincent Brooks Imp.

Hypoxis glabella, *Br.* H. pusilla, *H.f.*

W. Fitch del. et lith.

Vincent Brooks Imp.

Arthropodium laxum, *Sieb.*

W. Fitch del. et lith.

Vincent Brooks Imp.

Cæsia corymbosa, Br.

Herpolirion Tasmaniæ, Hf.

D. Archeri, H.f.

W. Fitch, del et lith.

Vincent Brooks, Imp.

Dianella Tasmanica, *H.f.*

W Fitch del et lith

Vincent Brooks Imp.

Juncus australis, *H.f.* J. capillaceus *H.f.*

Plate CXXXV

W. Fitch, del et lith.

Vincent Brooks, Imp

Restio monocephalus. *Br*

Lepyrodia Tasmanica. *Hf*

W.Fitch del. et lith.

Vincent Brooks Imp.

Leptocarpus Brownii, *H.f.*

W. Fitch, del et lith.

Vincent Brooks, Imp

Hypolæna fastigiata, *Br.*

Trithuria submersa, *Hf.*

Alepyrum monogynum, *Hf.*

Aphelia Gunnii, *Hf.*

Centrolepis aristata, *R.&S.*

W Fitch del et lith.

Vincent Brooks Imp

W. Fitch del et lith

Vincent Brooks Imp

Cyperus sanguineo-fuscus, *Nees.*

W. Fitch del et lith.

Vincent Brooks Imp

Cyperus Gunnii, H.f.   *Chætospora tenuissima, H.f.*

W. Fitch, delt et Lith.

Vincent Brooks, Imp.

Chætospora capillacea, *H.f.*

Schœnus fluitans, *H.f.*

W. Fitch, del. et lith. Vincent Brooks, Imp.

Gymnoschœnus sphærocephalus, *Hf.*

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Isolepis crassiuscula *Hf.*

I. alpina, *Hf.*

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Isolepis prolifer, *Br.*

Isolepis cartilaginea. *Br.*

W. Fitch, del. et lith.

Isolepis lenticularis. *Br.*

Vincent Brooks, Imp.

Isolepis riparia, *Br.*

W. Fitch, del. et lith.

Vincent Brooks, Imp

Lepidosperma Oldfieldii, *Hf.*

L. concava, *Br.*

W. Fitch, del. et lith

Vincent Brooks, Imp

Lepidosperma lateralis, *Br.* · L. angustifolia, *Hf.*

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Cladium laxiflorum, H.f.

C. Gunnii, H.f.

W. Fitch, del et lith.

Vincent Brooks, Imp

Cladium tetraquetrum *H.f.*

W. Fitch, delt et lith

Vincent Brooks, Imp.

Carex Archeri, Boott.

C. Chlorantha Br.

W. Fitch, del et lith. Vincent Brooks, Imp.

Carex Gaudichaudiana, *Kth.* C. Cataractæ, *Br.*

W. Fitch, delt et lith.

Vincent Brooks, Imp.

Uncinia tenella, *Br.*

U. riparia, *Br.*

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Uncinia nervosa, *Boott.*

U. compacta, *Br.*

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Tetrarrhena tenacissima, *Nees.*

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Microlæna Gunnii, H.f. Diplax Tasmanica, H.f.

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Anthistiria australis, *Br.*

Plate CLVII

W. Fitch, del et lith

Vincent Brooks, Imp

Hierochloe rariflora, *H.f.*

Stipa setacea, *Br.*

W Fitch, del. et lith.

Vincent Brooks, Imp.

Dichelachne sciurea. H.f.

Agrostis parviflora Br.

W. Fitch, del. et lith.

Vincent Brooks Imp.

Agrostis venusta, *Trin.* A. æquata, *Nees.*

W. Fitch, del et lith.

Vincent Brooks, Imp.

Agrostis montana Br.

Agrostis scabra Br.

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Agrostis contracta, *Muell.*

Danthonia subulata, *Hf.*

Tab. CLXII.

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Danthonia pauciflora, *Br.*

Glyceria stricta, *Hf.*

Fitch del et lith.

Vincent Brooks Imp.

Danthonia Archeri, *Hf.*

D. nervosa *Hf.*

Fitch del et lith.

Vincent Brooks Imp

Poa tenera, Muell. P. saxicola. Br.

W. Fitch, del et lith.

Vincent Brooks, Imp.

Festuca Hookeriana, F. Muell.

Plate CLXV.

W. Fitch del. et lith.

Vincent Brooks, Imp.

Cystopteris fragilis, *Bernh. var β.*

W. Fitch, del. et lith.

Vincent Brooks, Imp.

Lomaria fluviatilis, *Spr.*

Todea Africana, *Willd.*

Ophioglossum vulgatum, L. var. β

W. Fitch, del. et lith.

Vincent Brooks, Imp.

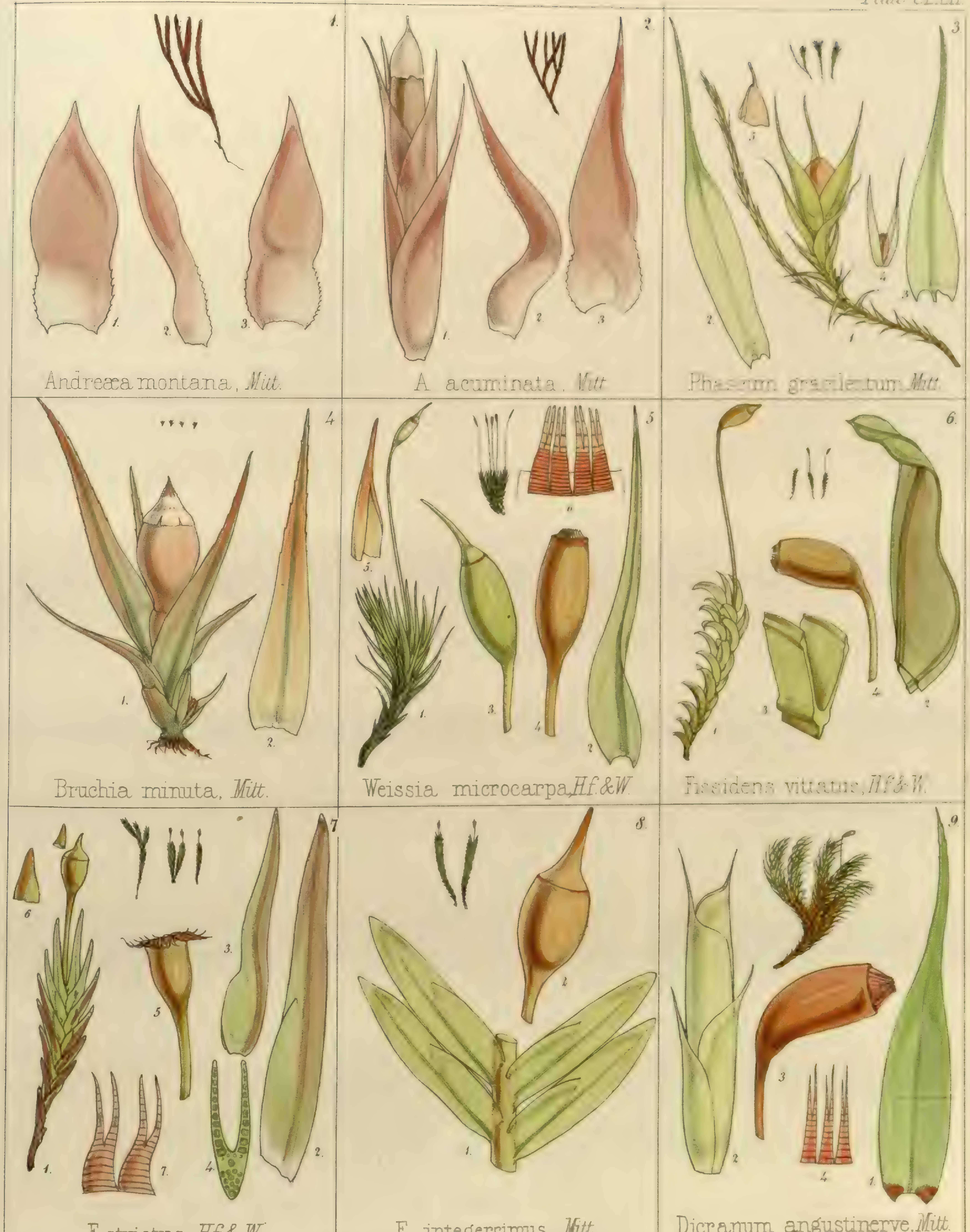
Botrychium Virginianum, Sw.

W. Fitch, del et lith.

Vincent Brooks, Imp.

A. Lycopodium Selago, *L.*

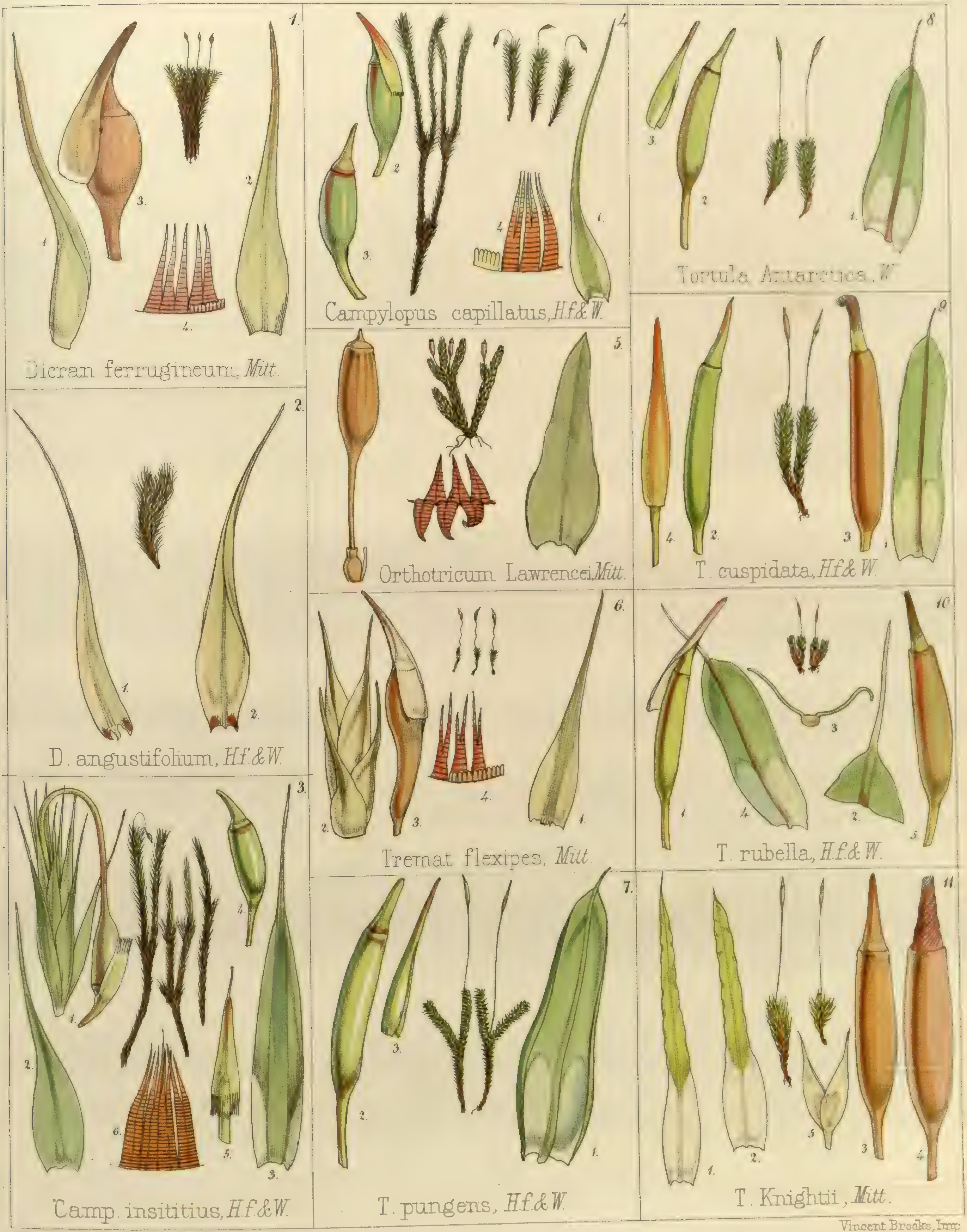
B-F. ———— varium, *Br.*



Wilson, Mitten & Fitch, del. _W. Fitch, lith.

Vincent Brooks, Imp.

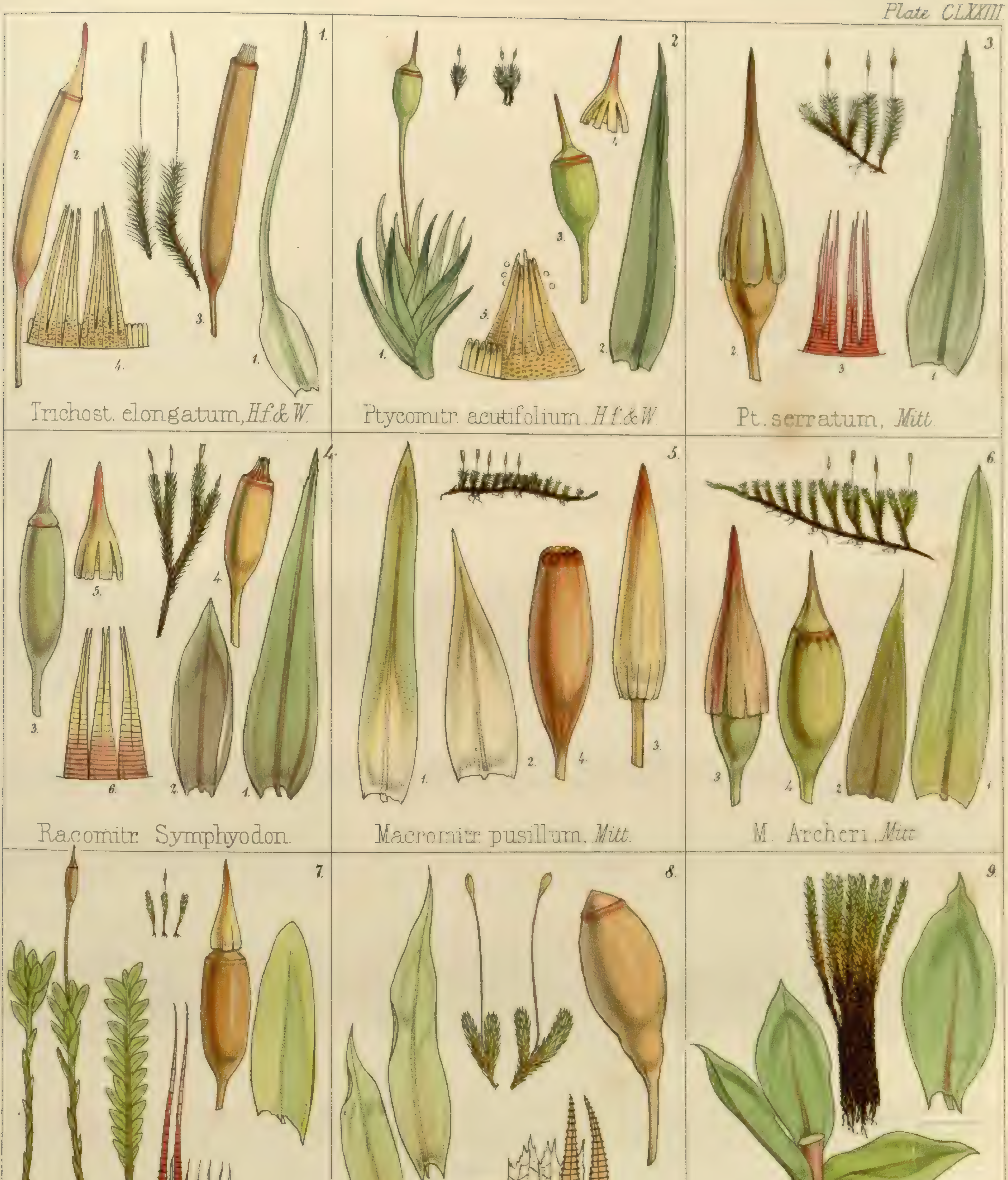
Plate CLXXII.



Wilson, Mitten, & Fitch, del. — W. Fitch, lith.

Vincent Brooks, Imp.

Plate CLXXIII.



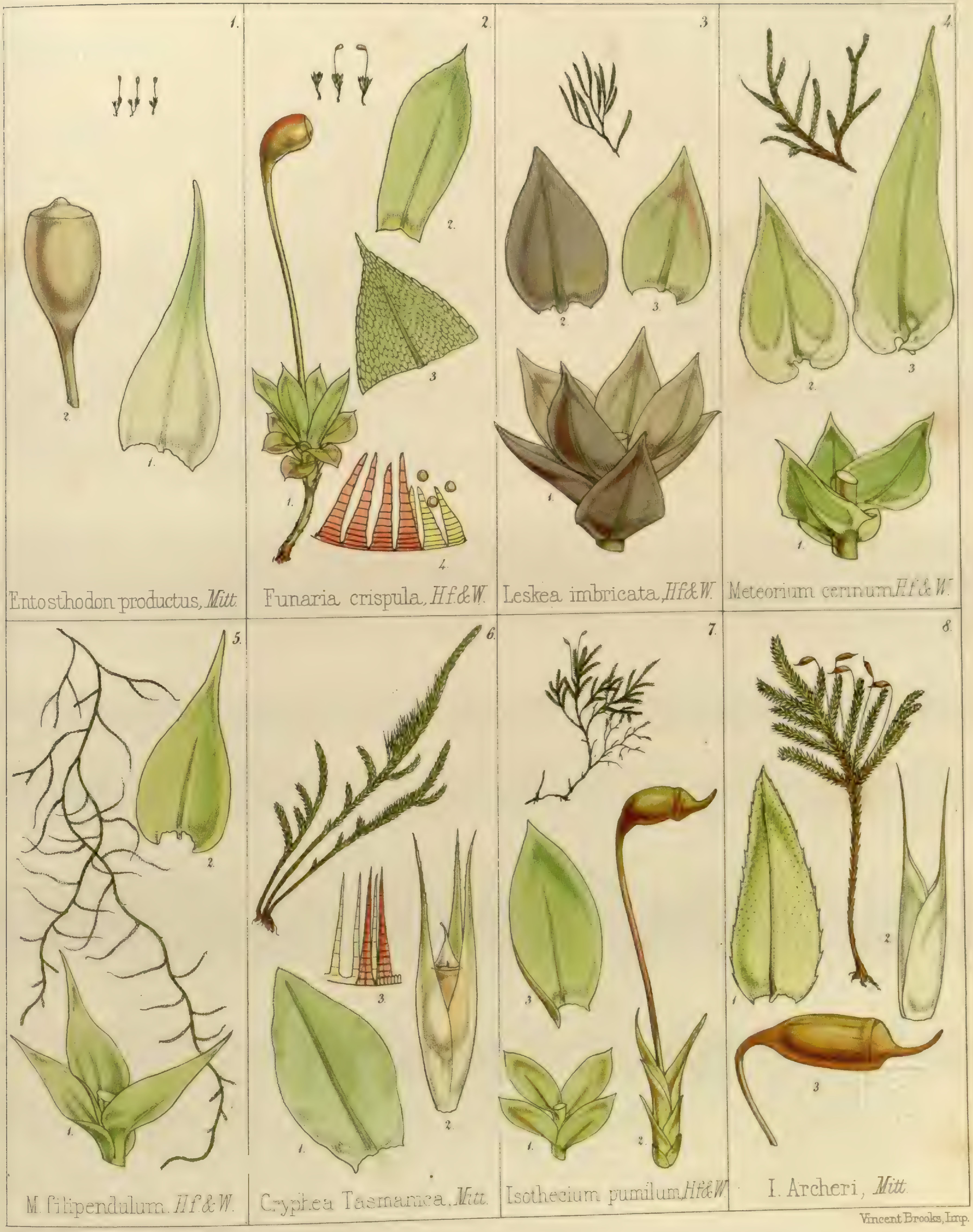
Wilson, Mitten & Fitch, del. _ W. Fitch, lith.

Vincent Brooks, Imp.

Plate CLXXIV

Wilson, Mitten & Fitch, del. W. Fitch, lith.

Vincent Brooks, Imp.



Wilson, Mitten & Fitch, del. _ W. Fitch, lith.

Vincent Brooks, Imp.

Plate CLXXVI.

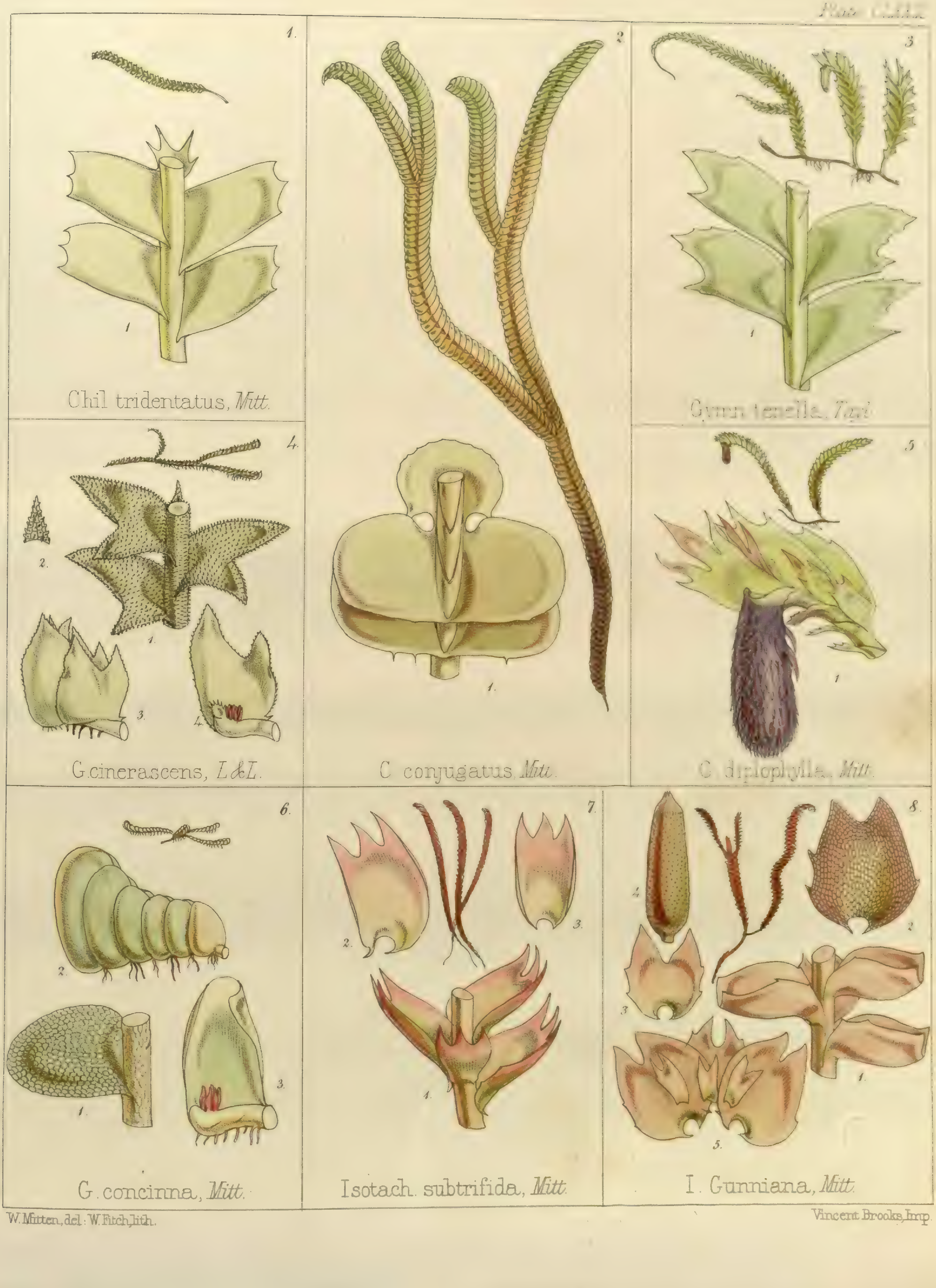
Plate CLXXVII.

Wilson, Mitten & Fitch, del. _W. Fitch, lith.

Vincent Brooks, Imp.

Plate CLXXVIII

W. Mitten, del. W. Fitch, lith. Vincent Brooks, Imp.



W. Mitten, del: W. Fitch, lith.

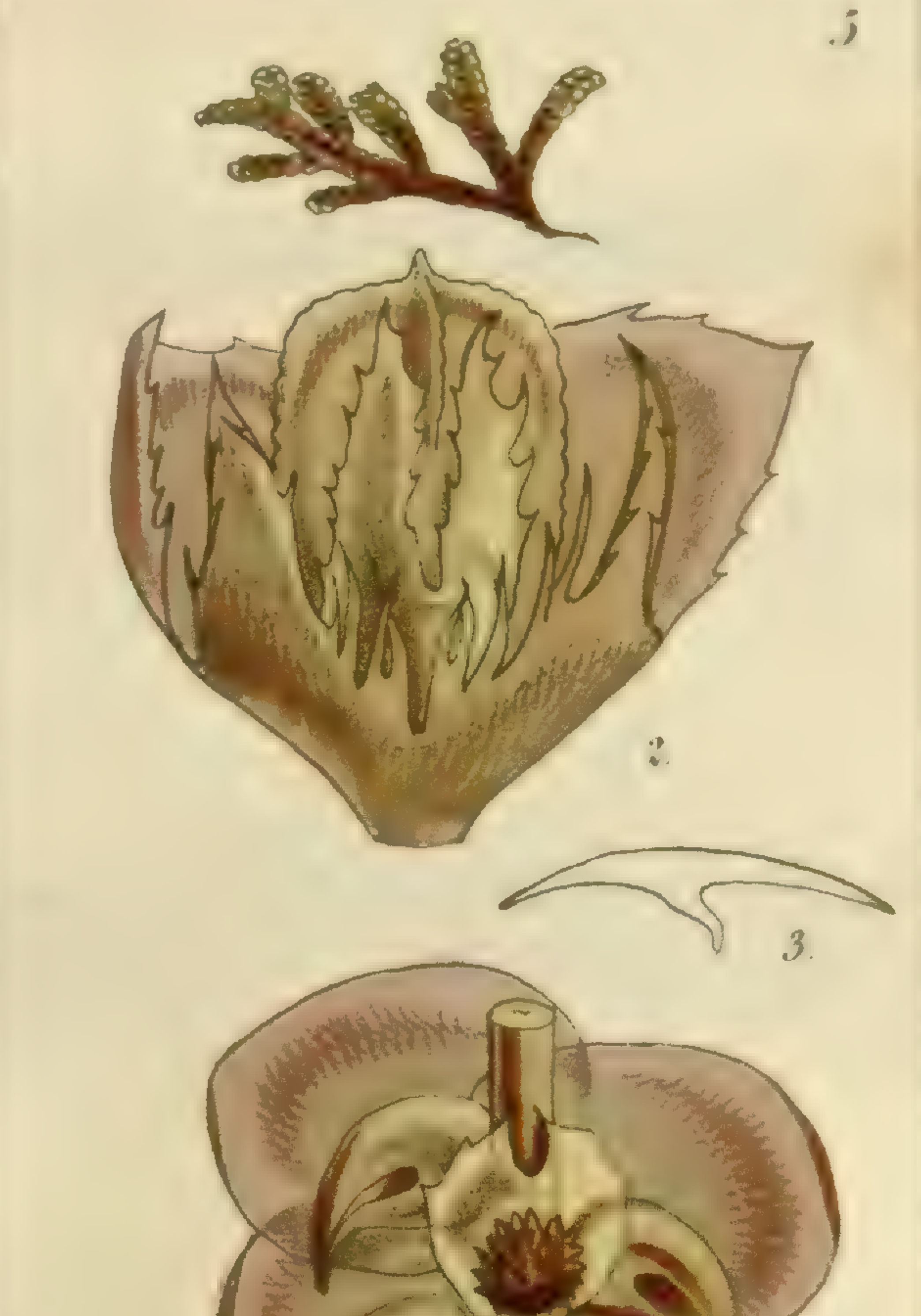
Vincent Brooks, Imp.

Lepidozia procera, *Mitt.*

Polyotus brachycladus, *Gottsche.*

Lejeunia Gunniana, *Mitt.*

Lejeunia lyratifolia, *H.F. & T.*



Frull. proboscidiphora, *Tayl.*

W. Mitten. del. W. Fitch. lith.

Vincent Brooks Imp.

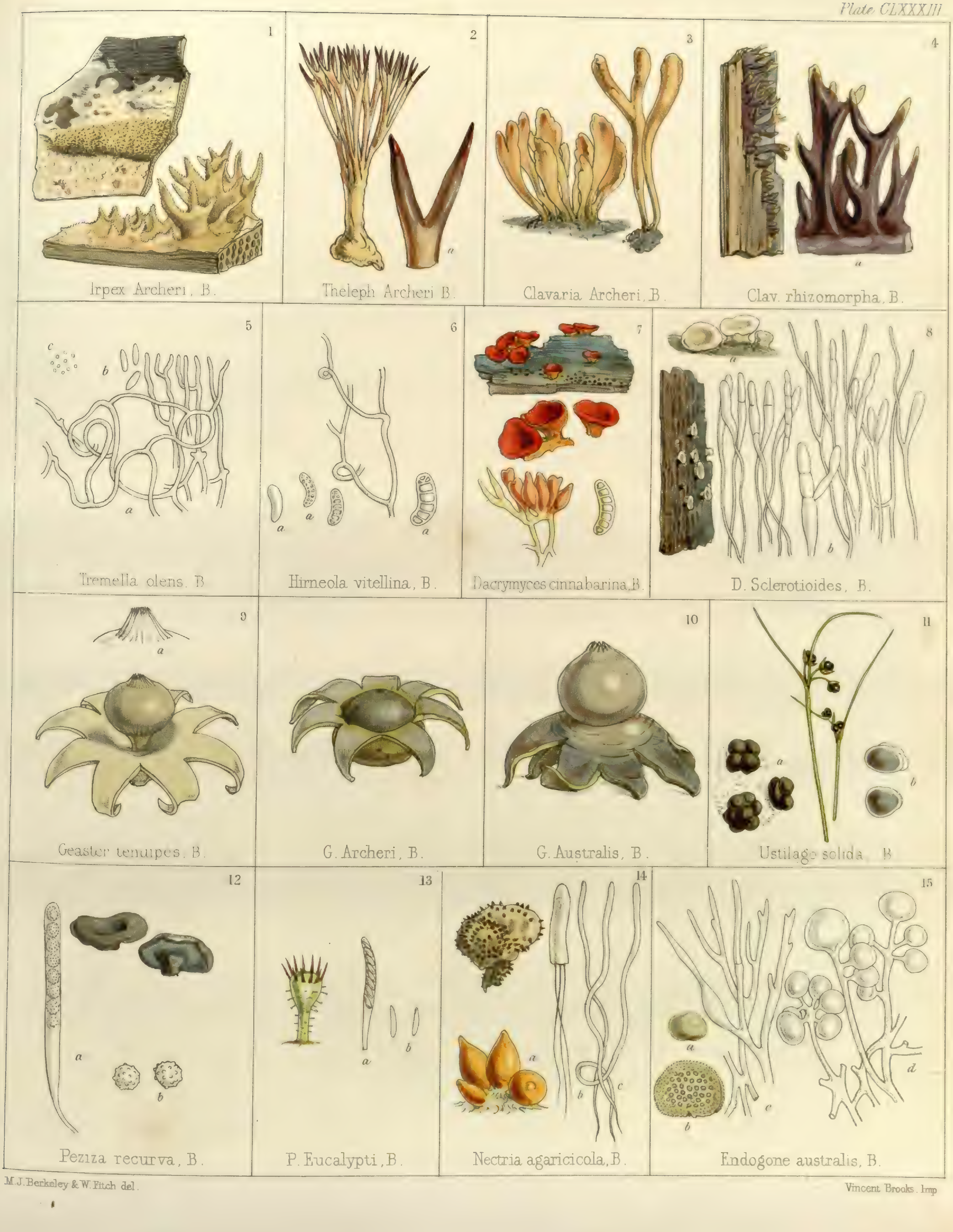
Plate CLXXXI

W. Archer, M. J. Berkeley & W. Fitch, del. _ W. Fitch, lith.

Vincent Brooks Imp.

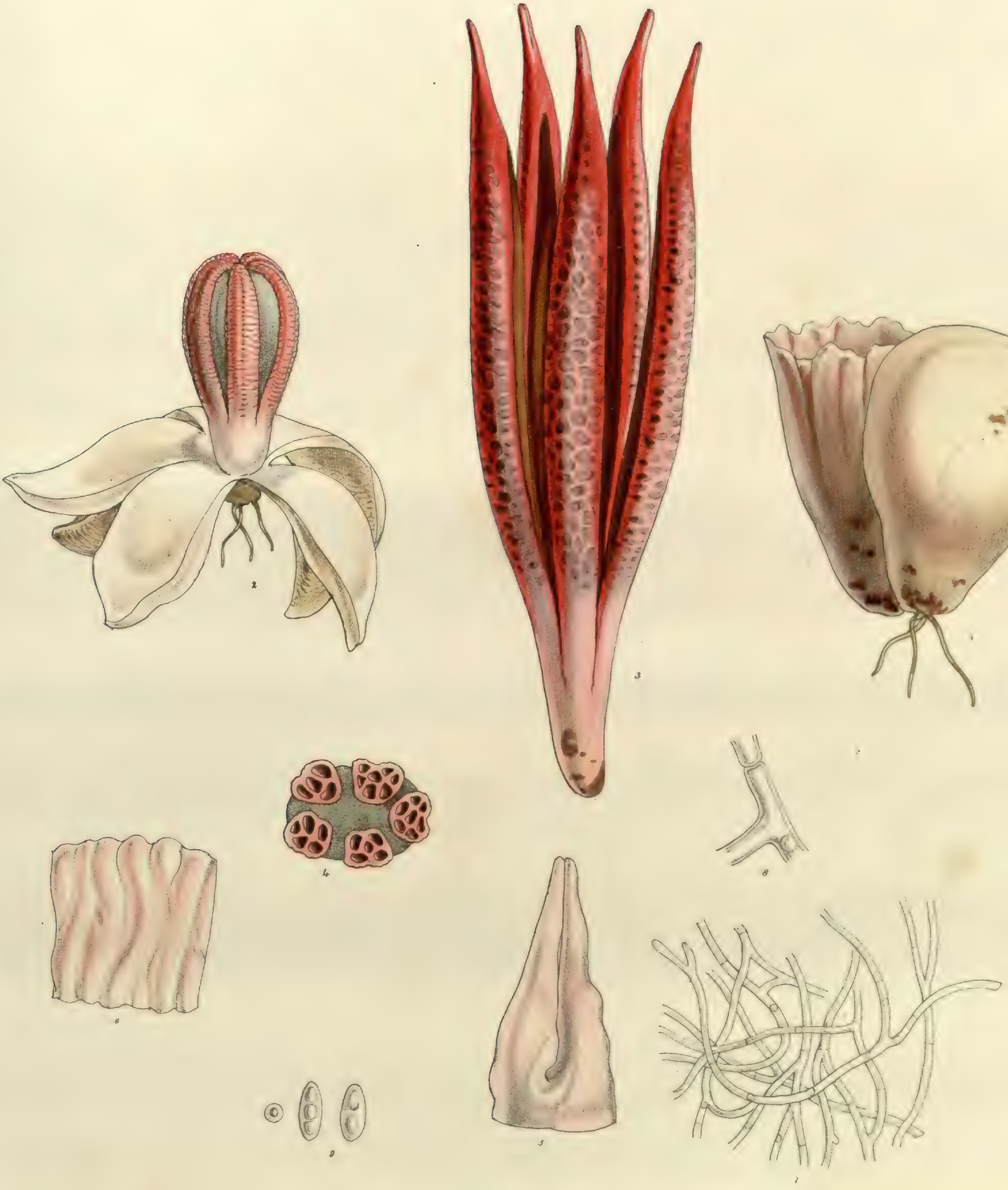
W. Archer & Fitch, del. W. Fitch, lith.

Vincent Brooks, Imp.



M. J. Berkeley & W. Fitch del.

Vincent Brooks. Imp



W. Archer del. W. Fitch, lith.

Vincent Brooks, Imp.

Lysurus pentactinus, *Berk.*

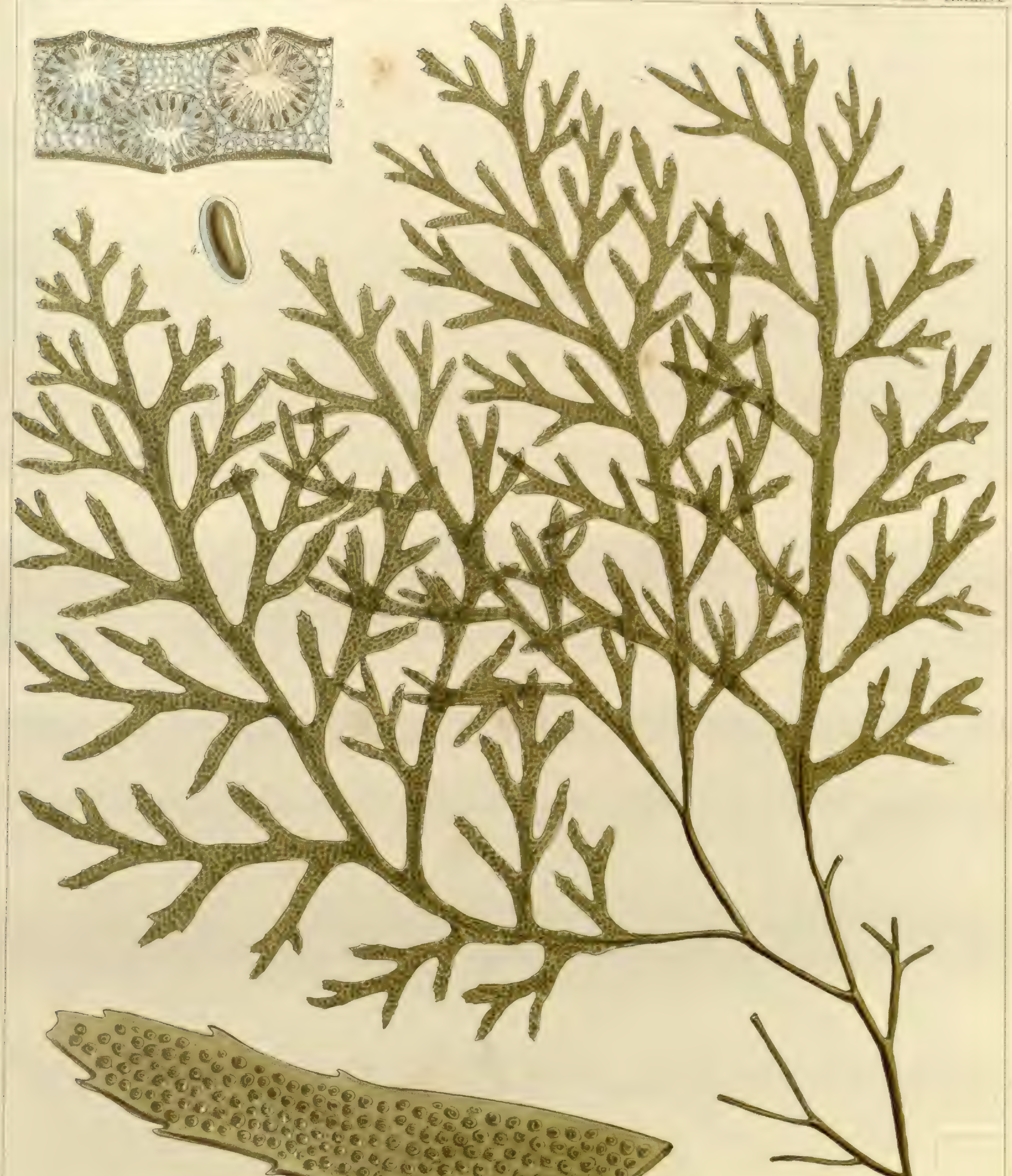
Plate CLXXXV.

W.H.H. del et lith.

Vincent Brooks Imp.

Cystophora xiphocarpa, *Harv.*

Plate CLXXXVI.



W.H.H. del. et lith.

Vincent Brooks Imp.

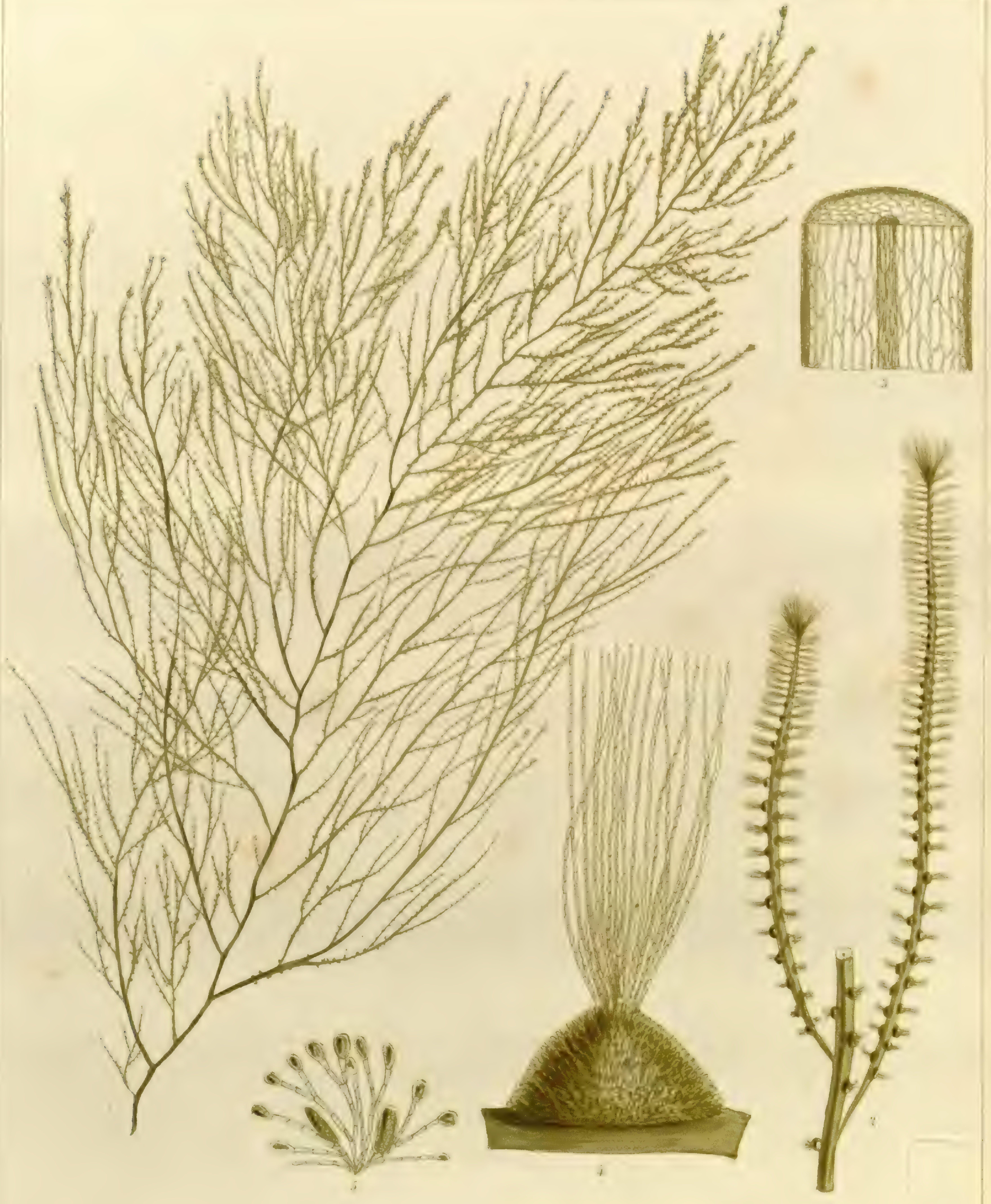
Myriodesma integrifolia *Harv.*

W H H del. et lith.

Vincent Brooks

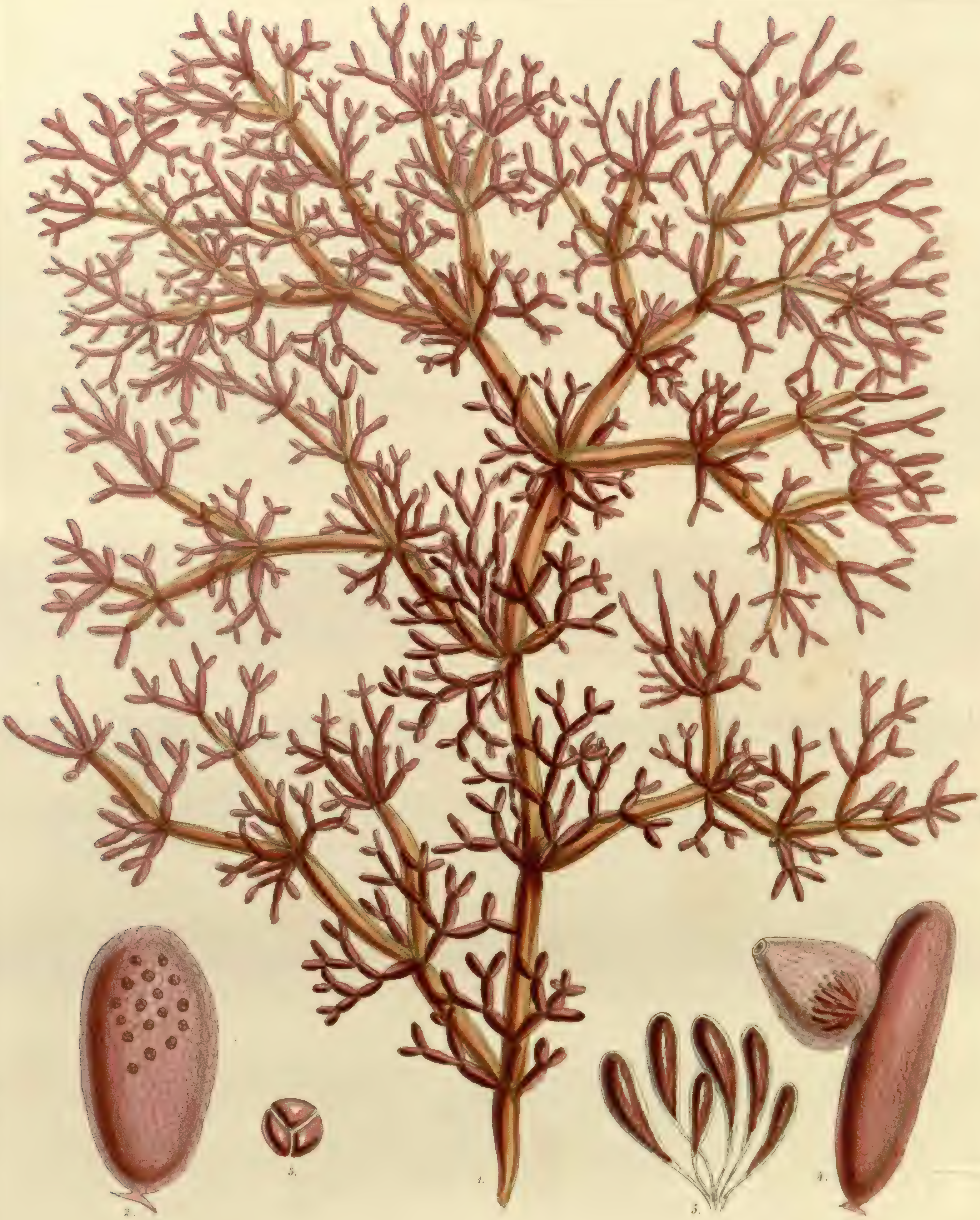
Bellotia Eriophorum, *Harv.*

Plate [illegible]



Vincent Brooks Imp.

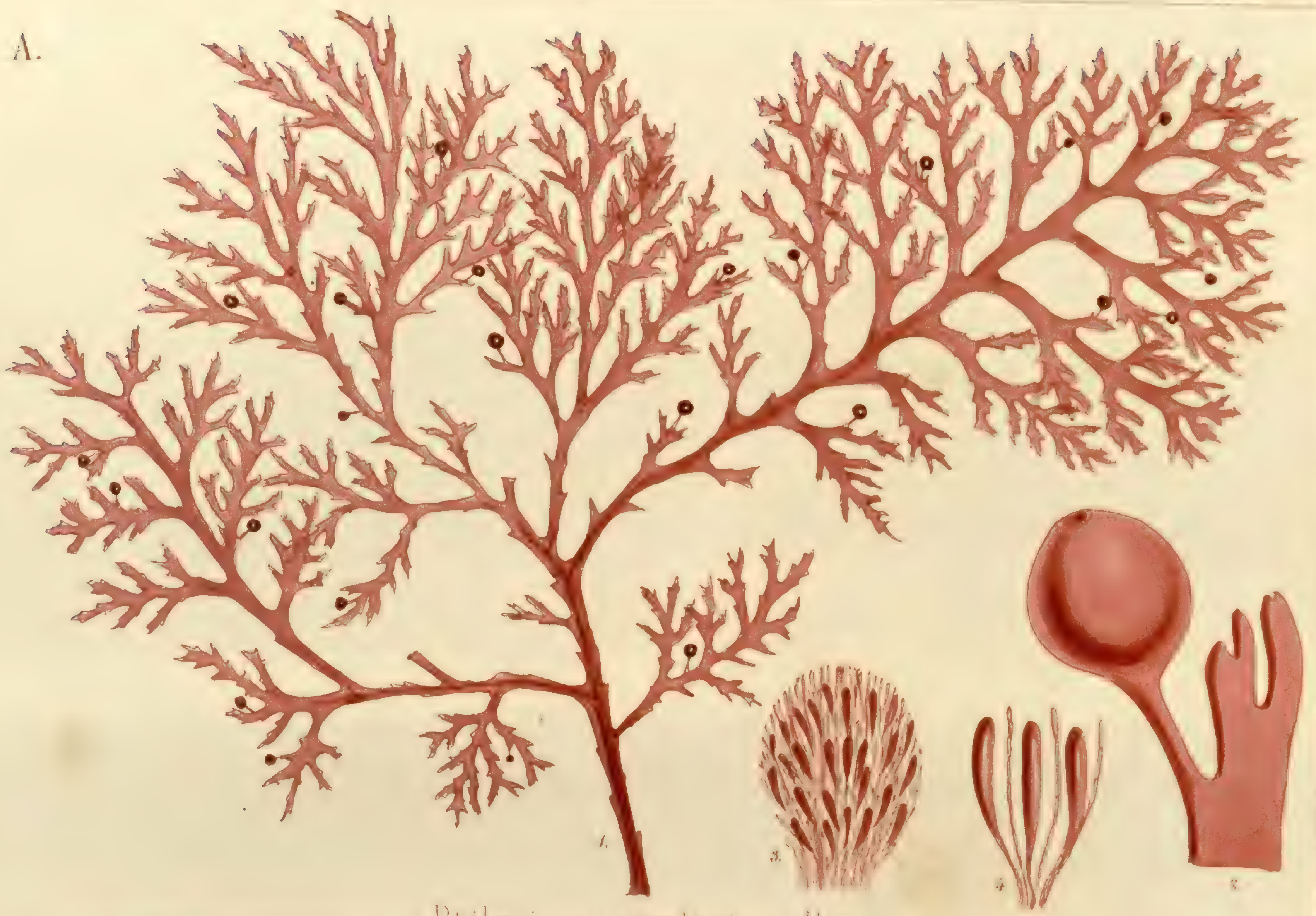
Nereia australis, *Harv.*



W. H. H. del et lith.

Vincent Brooks Imp.

Chondria opuntioides, *Harv.*

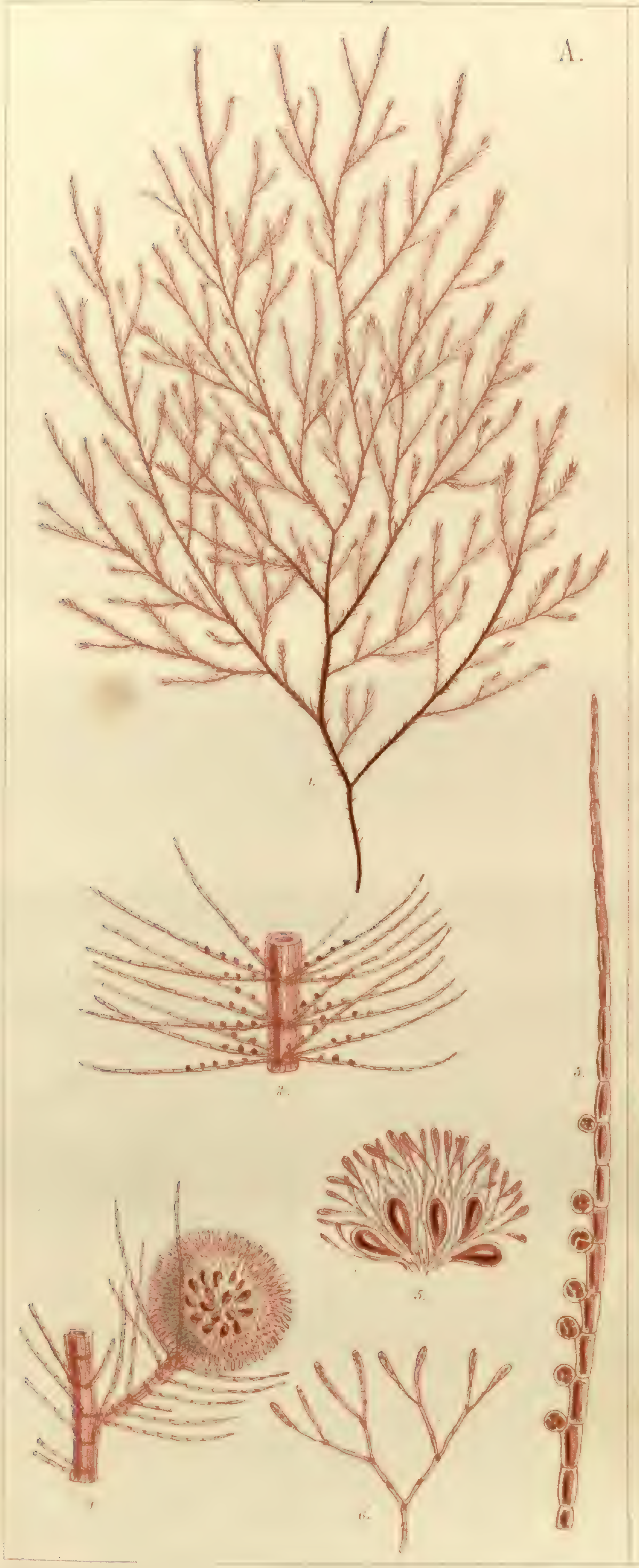


Ptilonia australasica, *Harv.*

W.H.H. del. et lith.

Vincent Brooks Imp.

Delesseria Tasmanica, *F. Muell.*



W.H.H. del. et lith.

Wrangelia setigera, *Harv.*

Wrangelia mucronata, *Harv.*

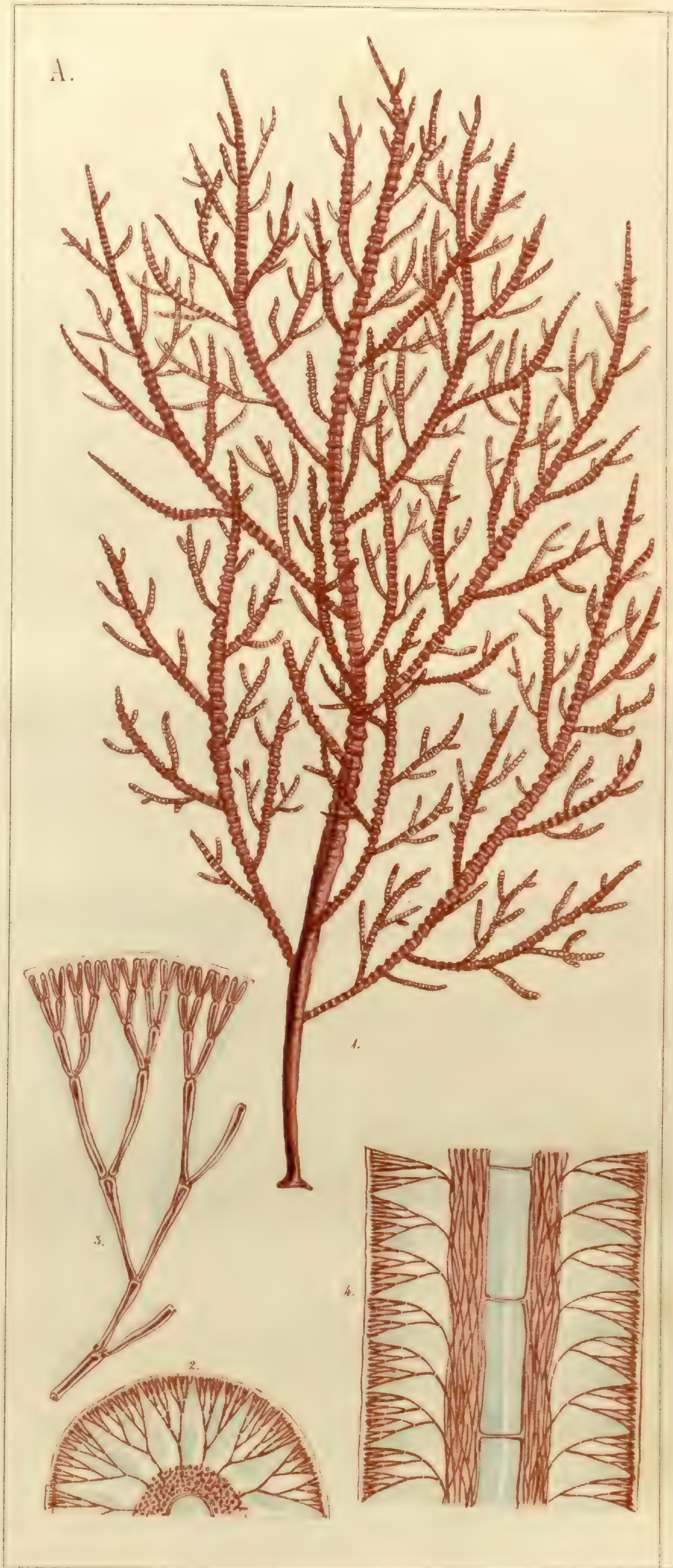
W.H.H. del. et lith.

Vincent Brooks Imp.

Mychodea disticha, *Harv.*

Polycœlia fastigiata, *Harv.*

Plate CXVII.



W.H.H. del et lith.

Vincent Brooks Imp.

Gulsonia annulata, *Harv.*

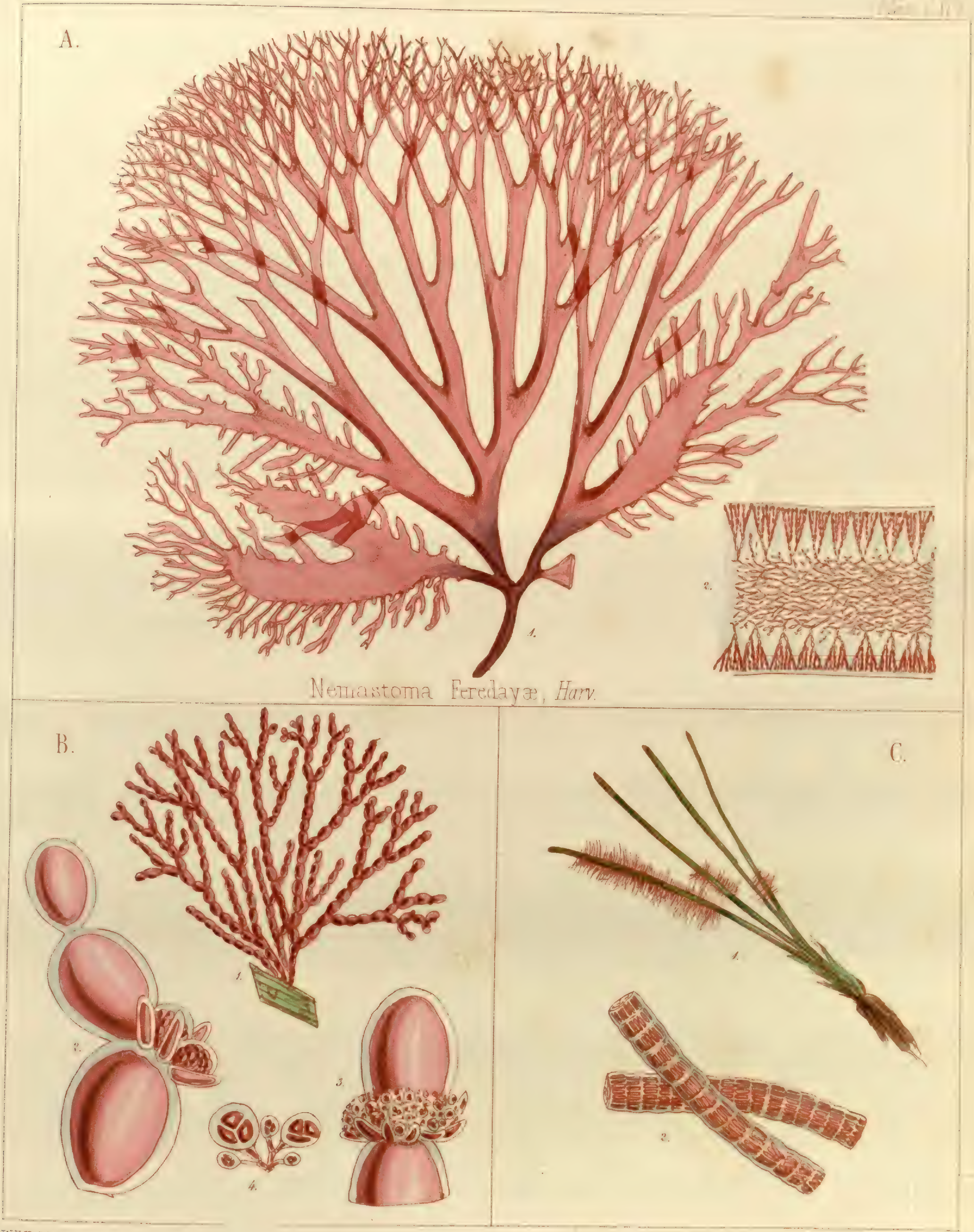
Crouania insignis, *Harv.*

W H H del. et lith.

Vincent Brooks Imp.

Horea speciosa, *Harv.*

Horea polycarpa, *Harv.*

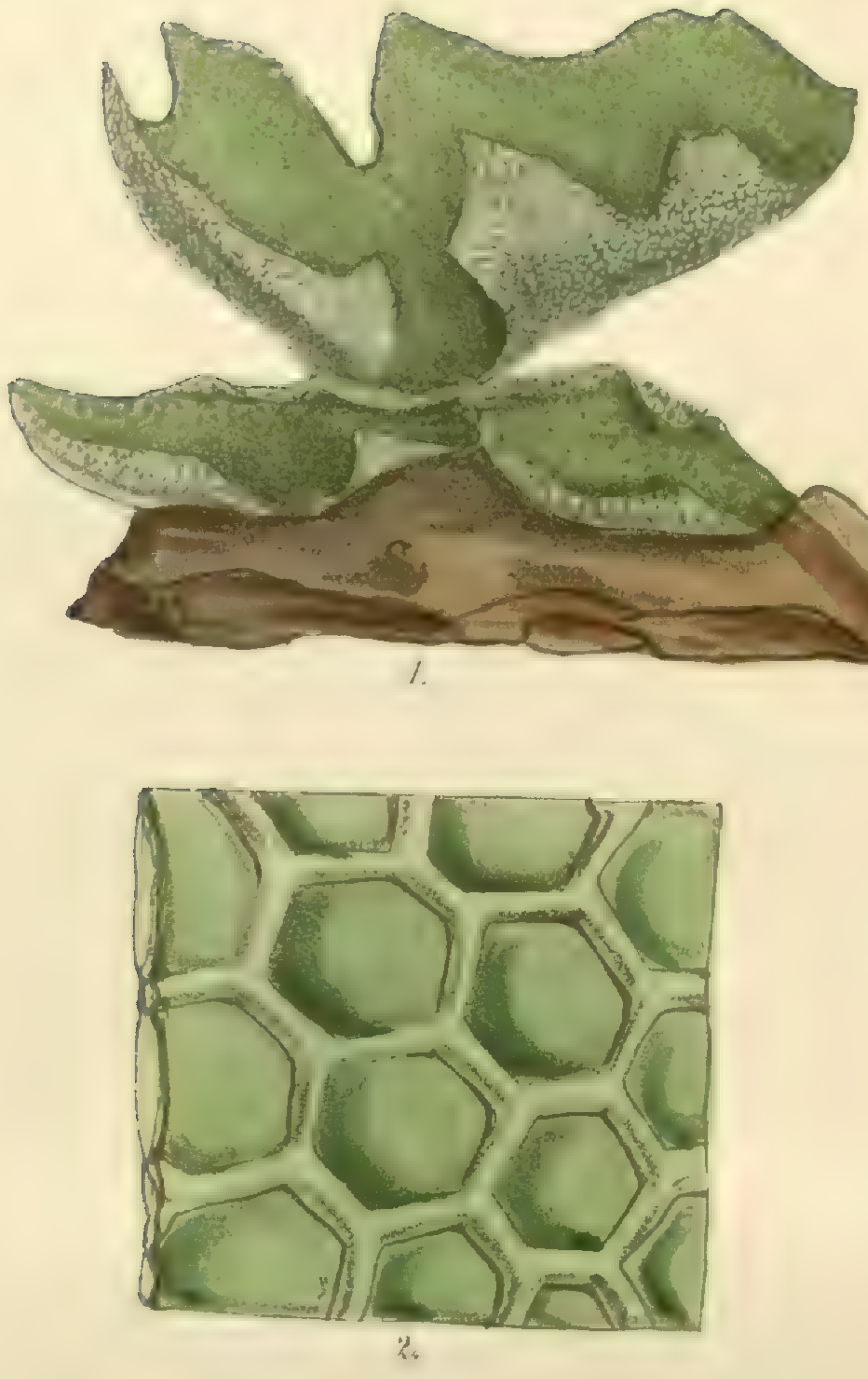


W.H.H. del et lith. Vincent Brooks Imp.

Griffithsia monilis, *Harv.*

Bangia pulchella, *Harv.*

A.



Dictyosphæria sericea, *Harv.*

B.

Œdogonium monile, *Berk & Harv.*

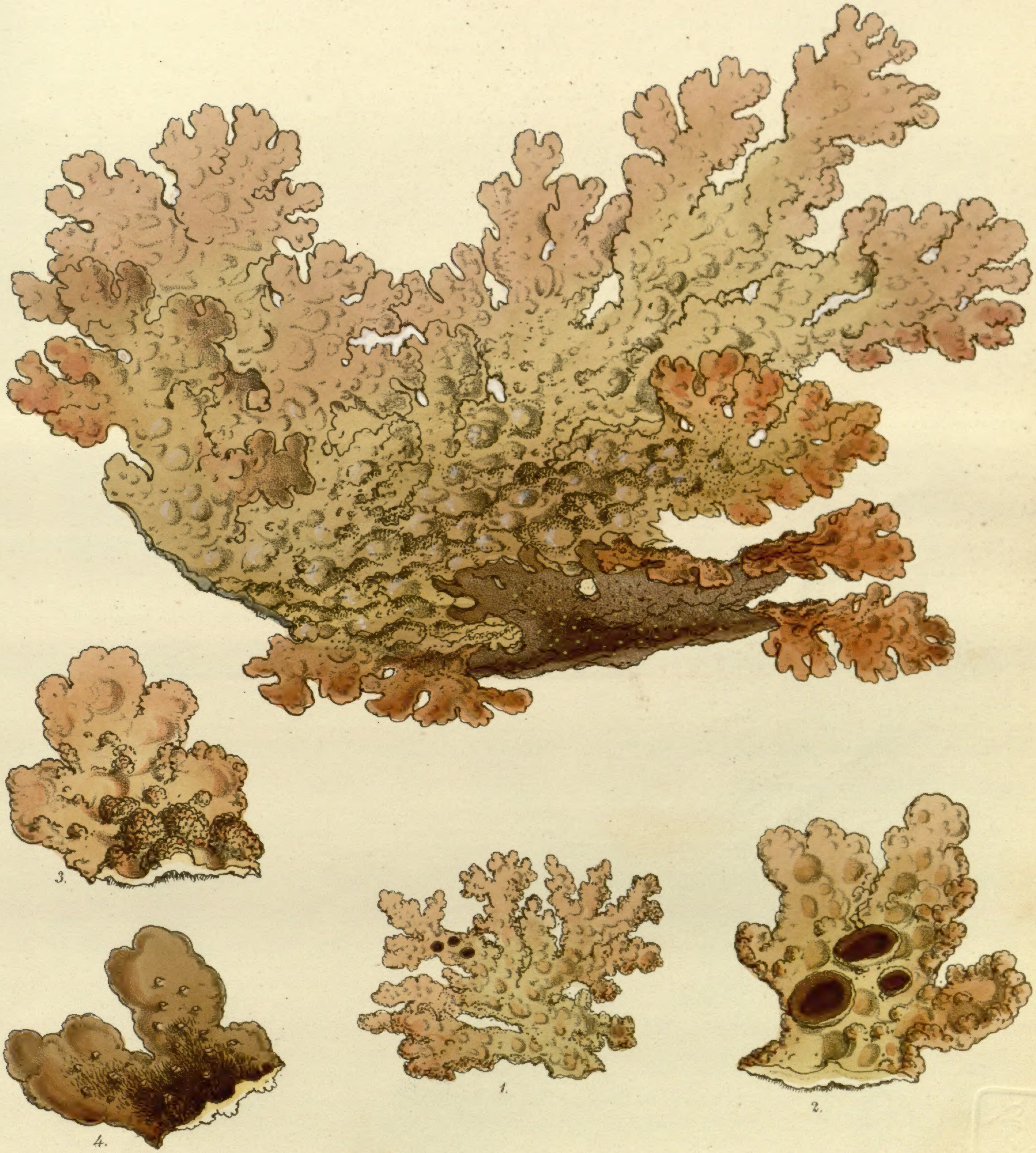
C.

Conferva Darwinii, *H.f. & H.*

W.H.H. del. et lith.

Vincent Brooks Imp.

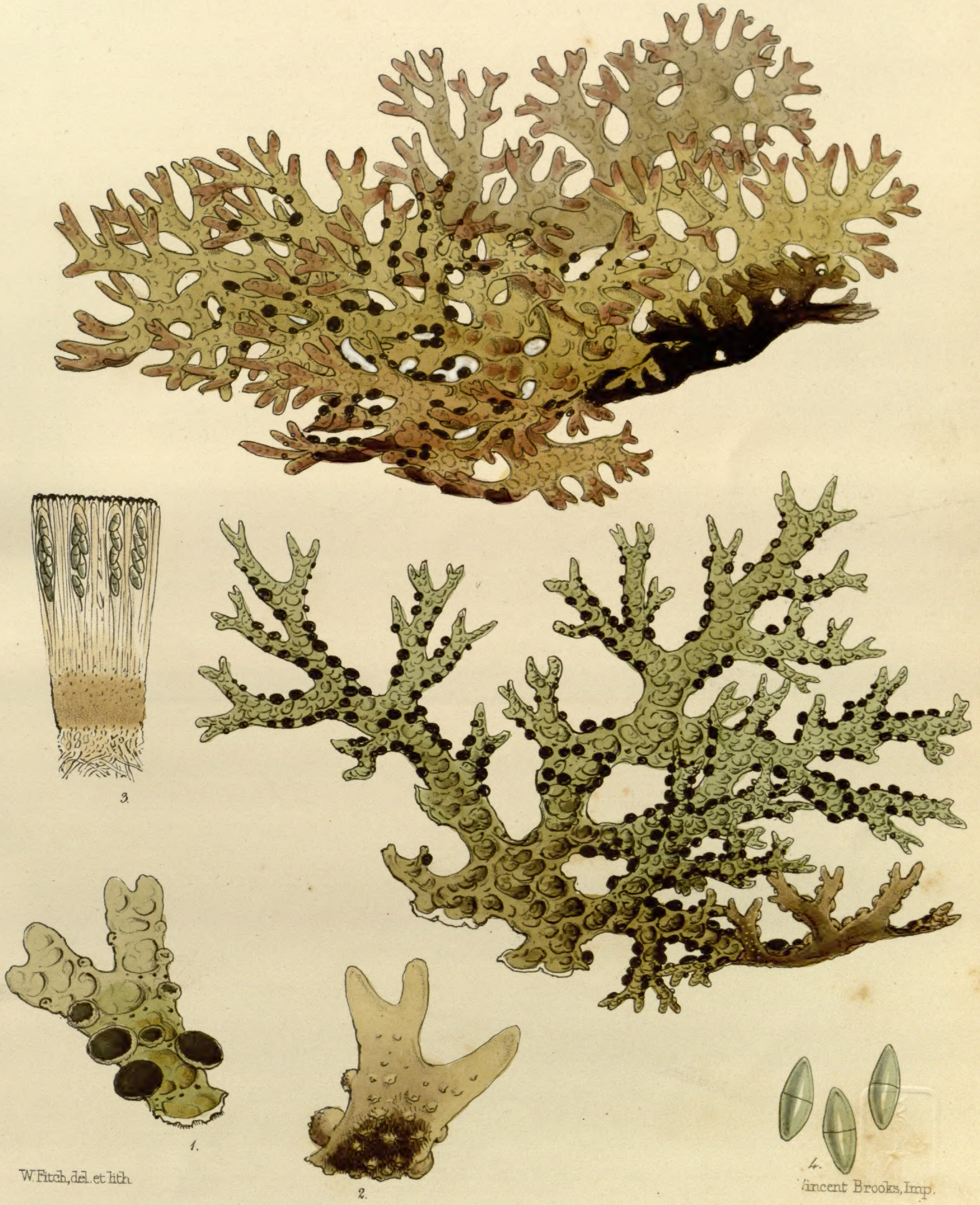
Plate CXCVII.



W. Fitch, del. et lith.

Vincent Brooks, Imp.

Sticta granulata, Bab.

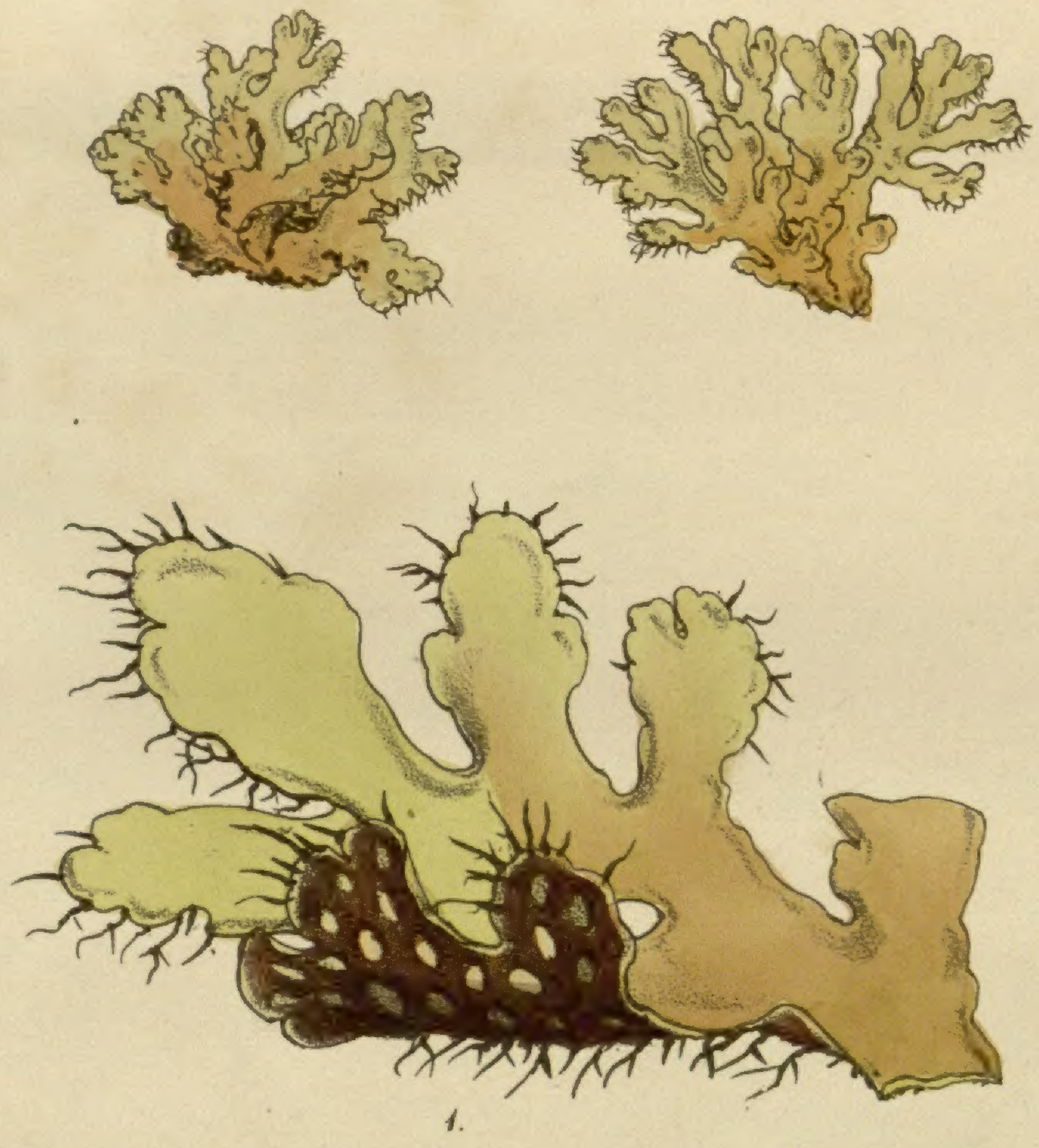


W. Fitch, del. et lith.

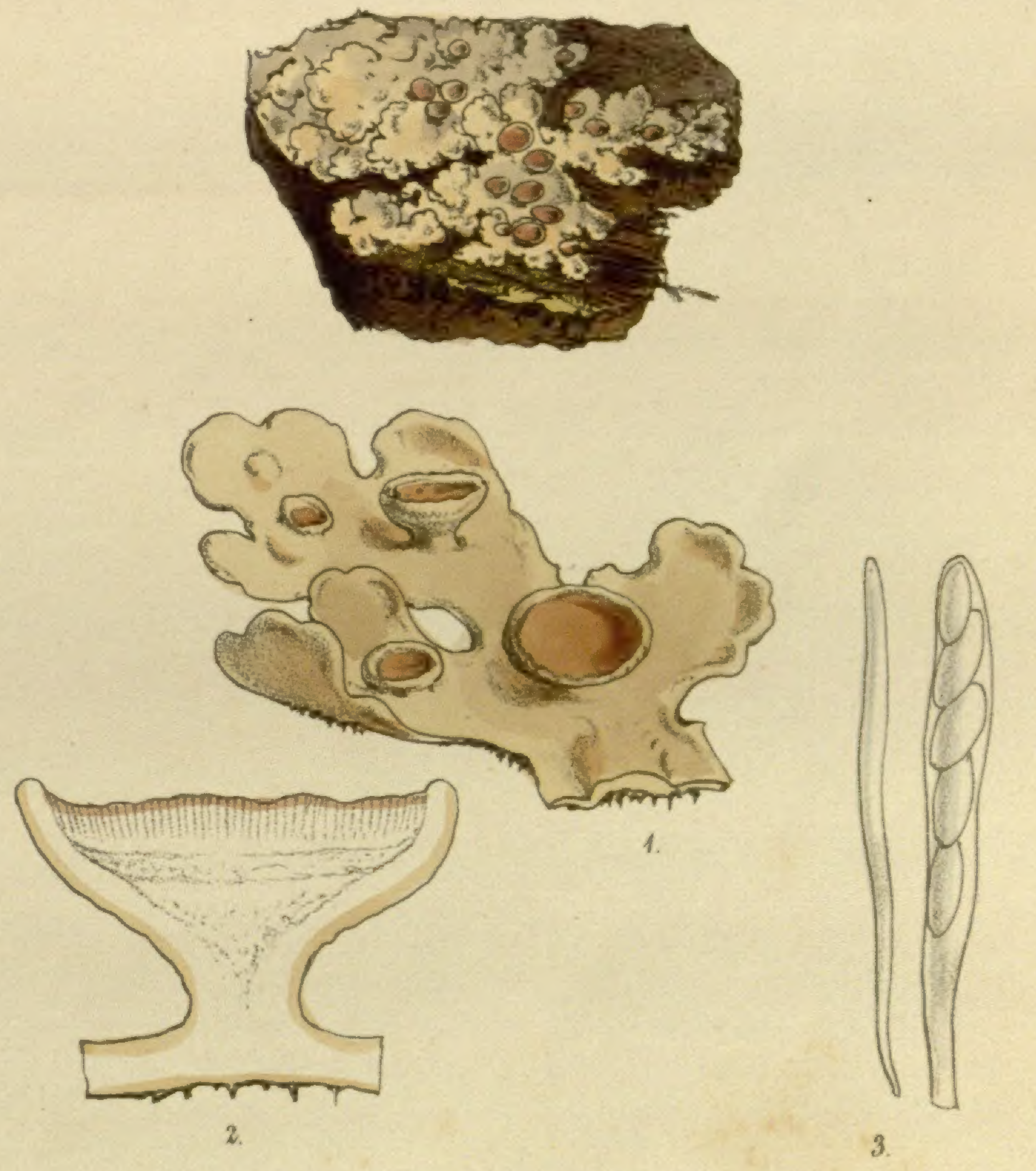
Vincent Brooks, Imp.

Sticta foveolata, *Del.*

Nephroma cellulosum, Ach.



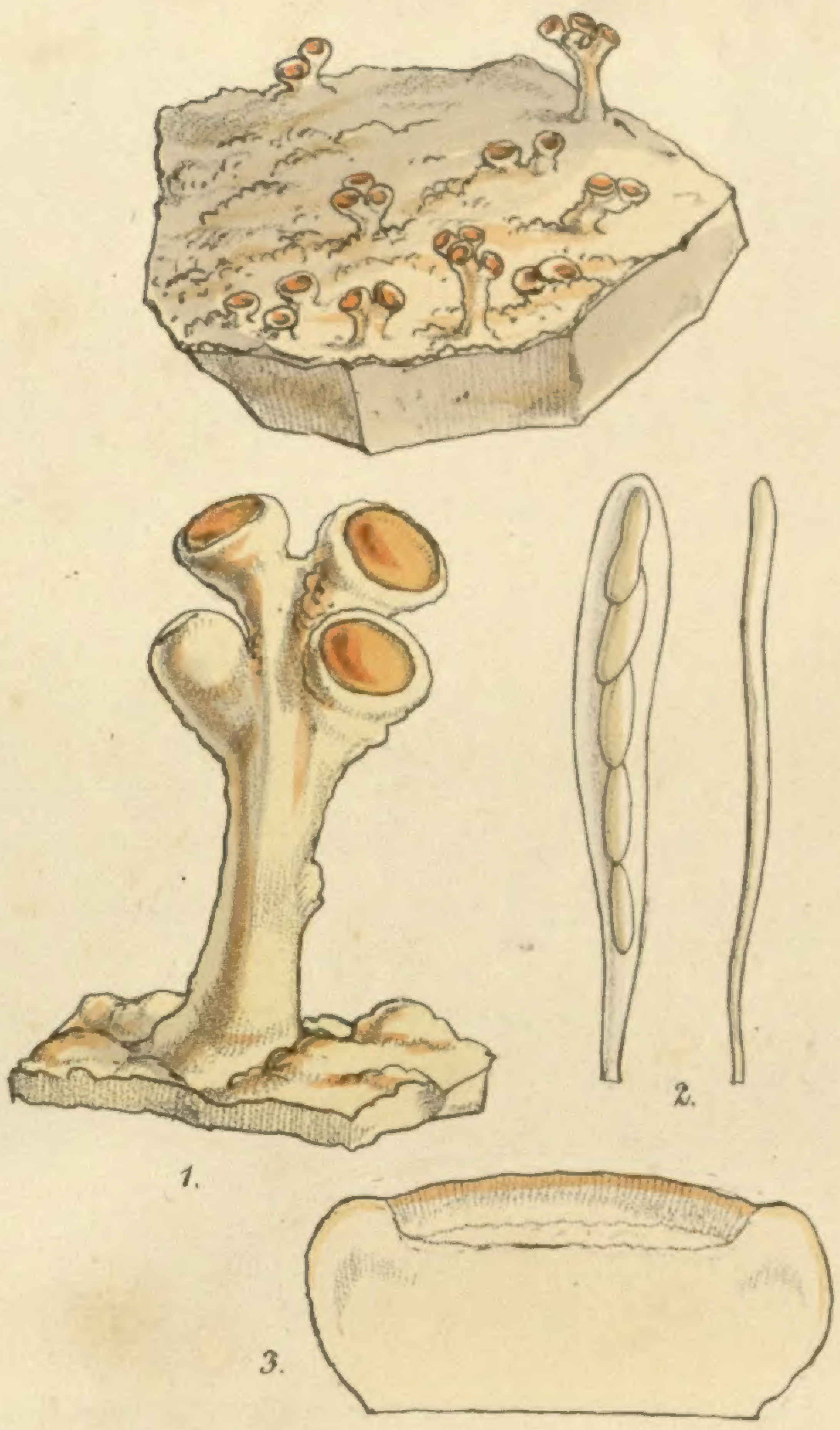
Sticta cetrarioides, Bab.



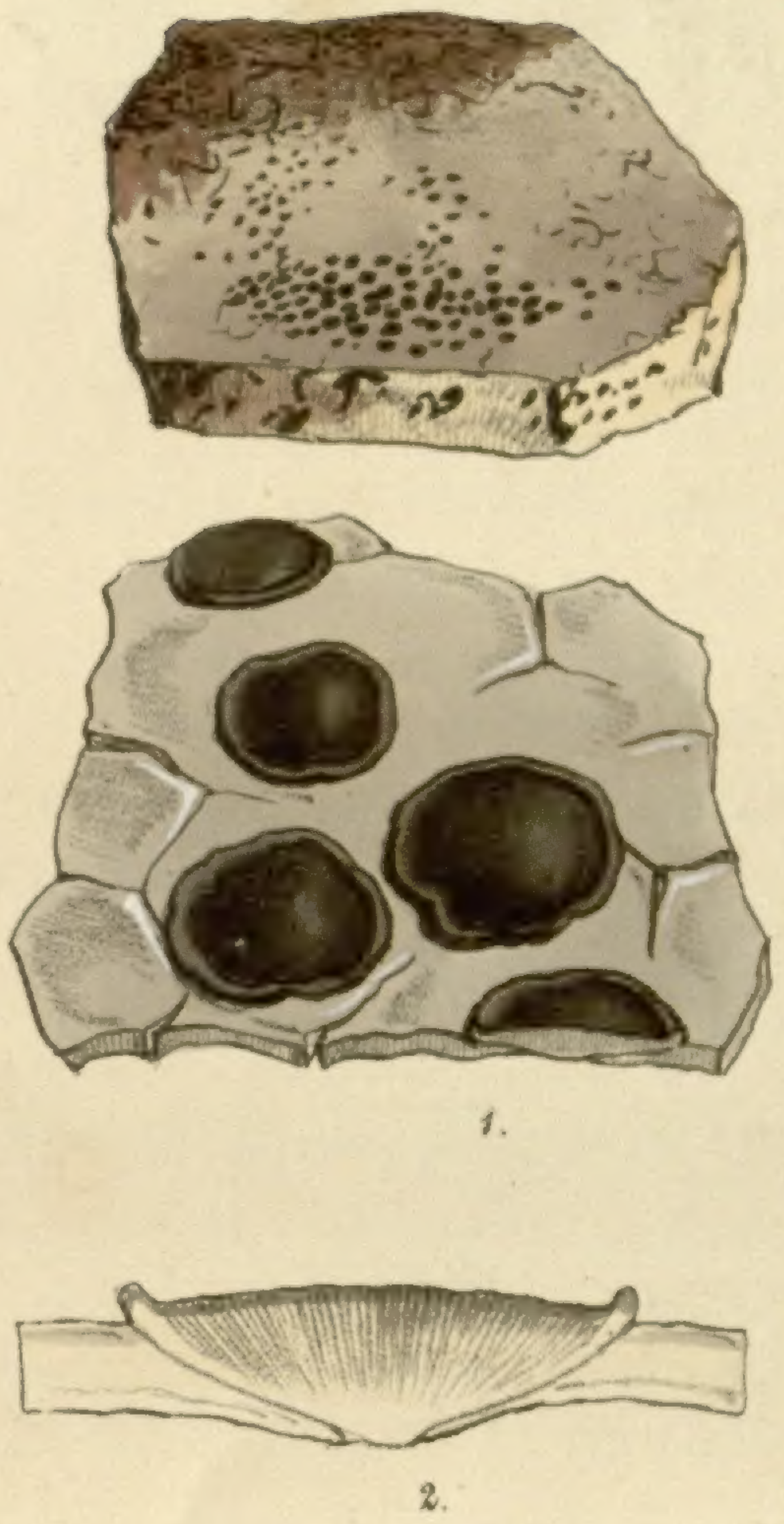
Bæomyces splachnirima, Mitt.

W. Mitten. & W. Fitch, del. W. Fitch, lith.
Vincent Brooks, Imp.

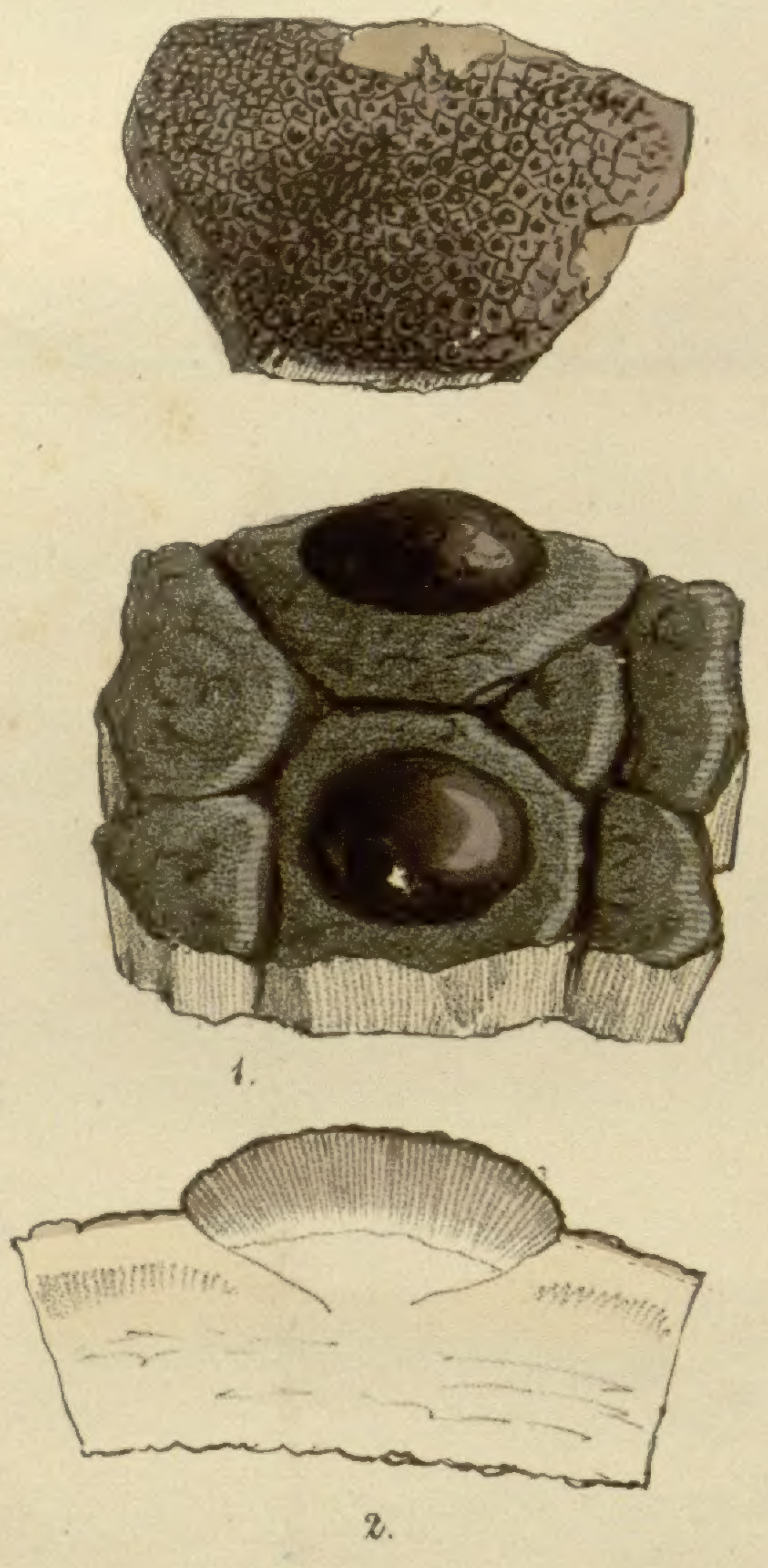
Parm. rugulosa, Nyl.



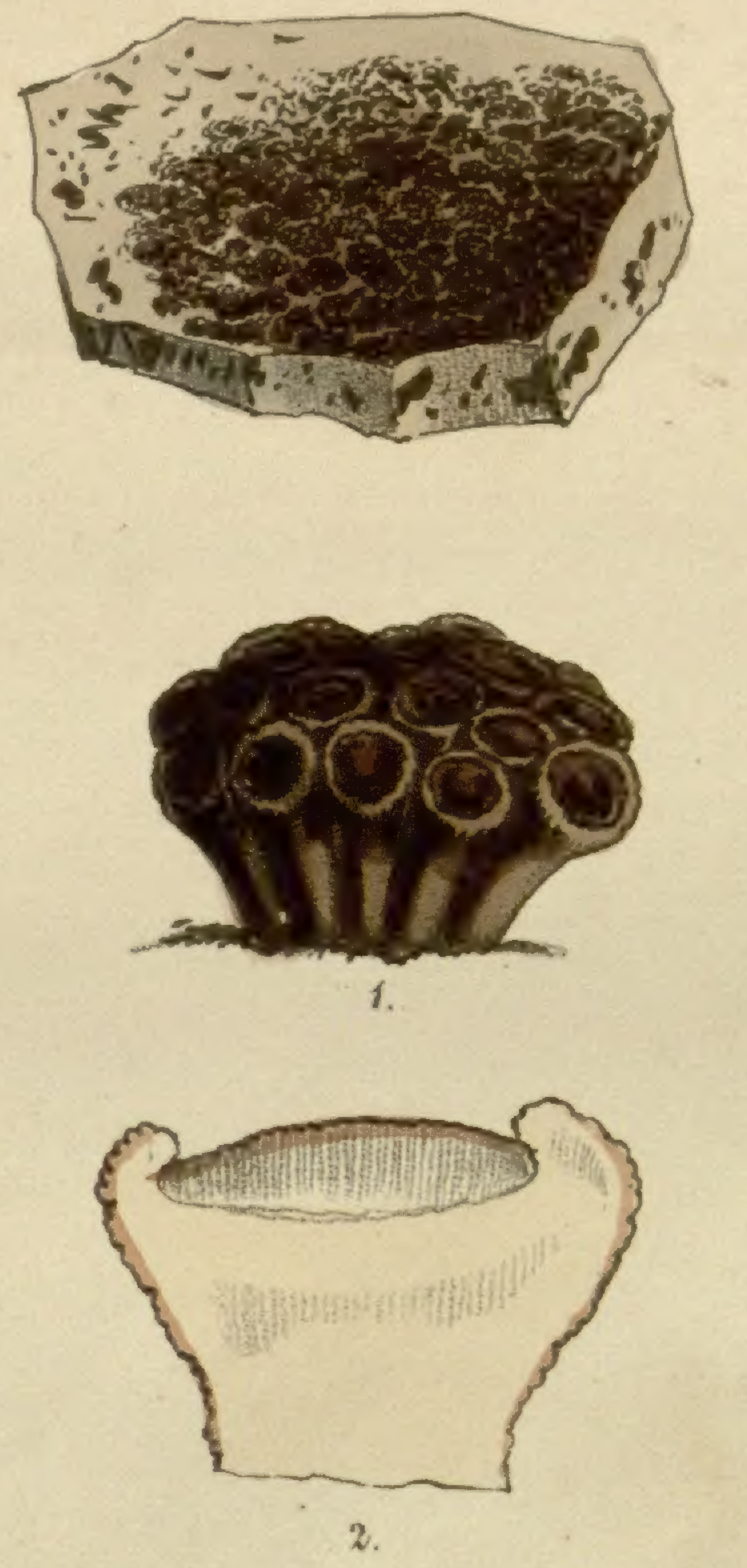
Bæom. heteromorphus, Nyl.



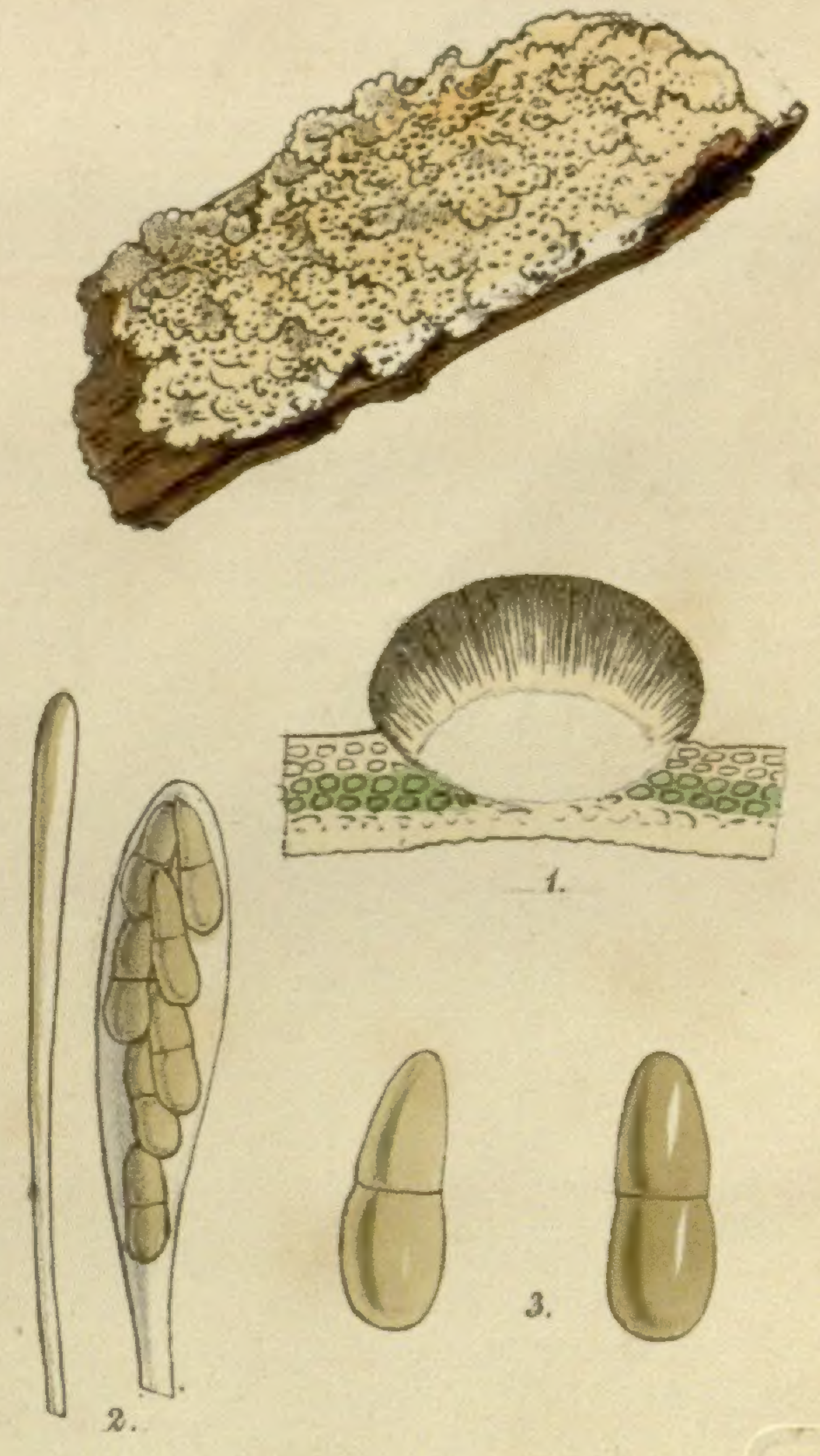
Lecid. leptocarpa, Nyl.



Lecid. petræoides, Nyl.



Pyr. Tasmanica, Nyl.



Abroth. Smithii, Tul.

W. Mitten & W. Fitch, del. W. Fitch, lith. Vincent Brooks, Imp.